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Transforming young adults' climate learning and actions through a co-created climate communication retreat

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ABSTRACT

This article brings climate communication approaches to transformational climate learning by critically evaluating an experimental climate communication retreat that brought 20 young adults from across Europe together in Austria to co-create climate communications as a constitutive dimension of climate action. Structured around the transformational principles of interdisciplinarity, multidimensionality, collaborative project-based learning, reflexivity and action-oriented, the retreat specifically focused upon the creative co-production, between peers, of climate communication as communicative meaning-making and action. The retreat experience transformed young people's sociocultural understandings of climate change, and climate communication as meaning-making and action, and increased their self and group efficacy. The key factors contributing to these transformations were: the forging of collective identity, peer-to-peer learning, emotional sharing, reflexive spaces, inspiring learning environment, interdisciplinary learning, multidimensional experiences, and collaborative project-based communications. Situating co-created climate communication within transformational learning can help facilitate collective experiences beyond direct climate action participation, helping create education for social change.

Introduction

The global youth climate movement has brought social and political attention to the climate crisis (Marquardt 2020; de Moor et al. 2021), utilising a range of communicative and visual strategies to make young people's voices heard (Eide and Kunelius 2021; Feldman 2020; Catanzaro and Collin 2021). British school children are also campaigning for climate education that teaches climate change and climate justice 'across the curriculum' (Teach the Future 2022) and provides emotional support for youth climate anxieties. Young people are thus calling for *interdisciplinary* and *multidimensional* climate learning that addresses the complex sociocultural dimensions of climate knowledge and action.

Transformational climate learning is a growing body of work, addressing climate change as interdisciplinary and multidimensional, and situating (young) people as active participants (Trott,

Even, and Frame 2020; Kowasch et al. 2021). Using creative and arts participatory processes to facilitate more embodied and imaginative engagements is increasingly explored (Sterling, Dawson, and Warwick 2018; Bentz and O'Brien 2019; Bentz et al. 2022; Trott, Even, and Frame 2020; Dolejšová et al. 2021). Parallel, is the interdisciplinary field of climate communication examining the constitutive role of (mediated) communication in shaping climate knowledge, understanding and actions through cultural meaning-making, norms and ideologies (Moser 2016; Carvalho, Russill, and Doyle 2021). Communication scholars have also begun to explore how creative communication processes can engage (young) people in multidimensional climate learning, fostering new forms of climate communication (Boykoff 2019; Doyle 2020). Yet, very little research has brought climate communication, transformational climate learning, and participatory creative arts together. This is surprising given the role of mediated communication in shaping young people's climate perceptions (Chiari, Völler, and Mandl 2016), their use of visual and rhetorical communications for climate activism (Eide and Kunelius 2021; Feldman 2020; Catanzaro and Collin 2021), and youth calls for interdisciplinary and multidimensional climate learning (Teach the Future 2022).

Addressing this research gap, this article brings (creative) communication approaches to transformational climate learning, by critically evaluating an experimental climate communication retreat that brought 20 young adults (aged 21–29 years old) from across Europe together in Austria in 2018 to co-create climate communications as a constitutive dimension of climate action.[1] Focusing upon young people in emerging adulthood (Arnett 2007), we foreground the importance of transformational learning beyond children and adolescents. Representing differing levels of climate engagement, the goal was for the young people to work together to co-design their own climate communication campaigns, supported by the teaching of climate communication concepts and strategies (Doyle 2011, 2020, Moser 2016). Structured around the transformational principles of collaborative project-based learning, interdisciplinarity, multidimensionality, reflexivity and action-oriented (Sterling, Dawson, and Warwick 2018; Eilam and Trop 2011; Trott, Even, and Frame 2020), the retreat placed specific focus upon the creative co-production, between peers, of climate communications as a form meaning-making and action. It also aimed to facilitate peer-to-peer climate learning and support young people's development as climate communicators and activists. The project thus asked, 1) what is the impact of a transformational climate communication retreat upon young adults' sociocultural learning about climate change and sense of self and group efficacy and, 2) what are the key factors in the learning experience that shape and support these impacts?

Drawing upon emerging research into creative processes in transformational climate learning (Bentz and O'Brien 2019; Trott, Even, and Frame 2020), and youth climate activism (Budziszewska and Głód 2021; Eide and Kunelius 2021), this article contributes new perspectives to transformational climate learning practices through the underexplored lens of climate communication (Carvalho, Russill, and Doyle 2021). Critically evaluating young adults' experiences of the climate retreat, we highlight the factors that contributed to transformations in young people's sociocultural understandings of climate change, and increased self and group efficacy. These factors were: collective identity, peer-to-peer learning, emotional sharing, reflexive spaces, inspiring learning environment, interdisciplinary learning, multidimensional experiences, and collaborative project-based communications. The climate retreat took place before the first youth climate strikes in late 2018, yet the significance of collective and emotional experiences for climate engagement expressed by retreat participants echo those of youth climate strikers (Haugestad et al. 2021). We thus argue that situating collaborative communications within transformational learning can facilitate collective experiences beyond direct action participation, helping create education for social change. We offer methodological insights into the creation of transformational climate learning for young adults, whilst considering the possibilities and challenges for maintaining engagement beyond such time/space specific learning experiences.

Theoretical context

Youth climate activism: collectivity, emotion and communication

The youth climate strikes demonstrate how collective action can facilitate climate engagement. Creating *social peer relationships* is key to engaging young people with climate action - making affective bonds with peers and creating a sense of belonging or solidarity increases young people's sense of agency (Budziszewska and Głód 2021; Kowasch et al. 2021; Haugestad et al. 2021; Eide and Kunelius 2021). Whilst young people feel a complexity of climate emotions (Ojala 2012; Nairn 2019), the collective identity of youth climate activism can alleviate overwhelm and despair (Budziszewska and Głód 2021). Yet, activism's emotional toll also leads to burnout and over work (Budziszewska and Głód 2021). To avoid despair, Nairn recommends that 'we talk more explicitly about hope and despair with young people…whenever the opportunity presents in education and across diverse activist initiatives' (Nairn 2019, 447). As such, 'collectivising, rather than individualizing, despair might avoid negative consequences for activists and temper hope in productive ways' (ibid).

Communication is also central to youth climate campaigning. The climate science frame is used to emotionally appeal to governments and industries to listen to the science and take action (Feldman 2020; Eide and Kunelius 2021). Yet, foregrounding a 'science-driven politics' (Marquardt 2020, 1) offers apocalyptic visions of future society (de Moor et al. 2021), preventing more radical and just visions of societal transformation (Marquardt 2020; Kowasch et al. 2021). Catanzaro and Collin (2021) identify more emotionally complex and creative appeals by Australian youth climate protesters, with placards visually communicating anger, amusement, and empathy with non-human others through everyday contexts. This visual language, they argue, encompasses sociocultural and political dimensions of climate beyond science. Similarly, Kowasch et al. (2021) argue that when young Austrian climate activists became involved in their own communication projects - such as exhibitions exploring the socio-scientific issues - more radical societal solutions were offered. The production of communication contributes to climate engagement, further evidenced by the communication activities of prominent climate strikers –Greta Thunberg, Luisa Neubauer and Vanessa Nakate - who have published books, and given media and public talks. Communication thus forms a key potential for transformative learning and engagement.

(Participatory) climate communication

Since the mid 2000s, climate communication scholars have called attention to the constitutive role that mediated communication plays in shaping climate knowledge and action (Carvalho and Burgess 2005; Doyle 2007, 2011; Boykoff 2011; O'Neill 2013; Moser 2016). As a cultural meaning-making process, communication co-constitutes climate change as material and socio-cultural realities (Carvalho, Russill, and Doyle 2021), where meanings are created and contested within and through different social actors and power relations. Visual, textual and other communication forms give meaning to climate change through cultural values, discourse and ideologies, constitutively framing how climate actions are envisaged and acted upon (Moser 2016; Carvalho, Russill, and Doyle 2021, 2). Communication research highlights the social dominance of neoliberal framings of climate change that situate individualised and technocratic solutions to climate change, reproducing the systemic inequalities of late capitalism. Such framings reinforce epistemological-colonial-extractivist separations of nature and culture, and humans and non-humans. Communicating more collective and equitable futures is thus 'constitutive of the epistemological, discursive and material conditions necessary for societal transformations at a systemic level' (Carvalho, Russill, and Doyle 2021).

Foregrounding the role of communication in civic climate action, Carvalho, Russill, and Doyle (2021) note that 'people's understandings of climate change, as well as of their positionality

and potential agency in relation to climate change, are *constituted* on communication. Likewise, civic action is largely performed through communication practices'. Recent climate communication scholarship has called for creative communication that involve audience participation to enable more experiential, affective and interdisciplinary forms of communication and learning (Boykoff 2019; Doyle 2020). A participatory approach to climate communication enacts the view that 'engagement with climate change is…tied to social and material interactions, whereby meanings are shaped and challenged collectively' (Carvalho, Russill, and Doyle 2021, 2). Participation in climate communication thus produces climate narratives *through* collective processes, with the potential to create more imaginative and equitable future visions. Including creative communications within transformational climate learning processes is thus crucial to develop new climate visions through collective processes.

Arts and communication in transformational climate learning

Transformational climate learning situates (young) people as active participants and contributors to the learning process (Trott, Even, and Frame 2020; Kowasch et al. 2021). Participatory processes can increase people's critical and reflexive thinking, helping question their existing knowledge and values (Sterling, Dawson, and Warwick 2018; Bentz and O'Brien 2019). Participatory processes can facilitate feelings of collectivity that motivate people to take action; enhanced when young people 'learn in a social environment, which inspires new ideas and reflections' (Kowasch et al. 2021, 18). Taking people outside of their everyday and educational spaces can contribute to transformational learning.

Whilst sustainability education has often overlooked creative learning (Sterling, Dawson, and Warwick 2018; Rousell and Cutter-Mackenzie-Knowles 2020), transformational climate learning has begun to incorporate creative arts based participatory approaches to facilitate embodied and imaginative engagements (Bentz and O'Brien 2019; Bentz et al. 2022; Trott, Even, and Frame 2020; Dolejšová et al. 2021). Embodied engagement would encompass the emotional, relational and intuitive aspects of our feelings (Sterling, Dawson, and Warwick 2018); shifting perceptions beyond the cognitive to facilitate action. As Eilam and Trop (2011) remind us, 'cognitive understanding is not enough to foster behavioural changes…emotions concern what gives meaning to life; they frame, transform and make sense of our perceptions, thoughts and activities' (39). Involving people in the creative production of images, stories, sounds and performances can help facilitate new ways of imagining climate change beyond the technocratic into more cultural and systemic responses (Bentz and O'Brien 2019). As Facer (2019) argues, educators need to use stories about climate change to facilitate interdisciplinary understanding to help prepare for climate futures. Integrating creative, participatory and other communication forms into transformational climate learning could thus provide more critically nuanced climate engagements.

In this article, we build upon the currently disconnected research on youth climate activism, climate communication and creative approaches to transformational climate learning, bringing them together to evaluate an experimental climate communication retreat as a transformational learning experience.

Materials and methods

Overview

The retreat was co-devised by the European project team comprising academics from climate communication and climate science, creative arts practitioners, media communications consultants, climate engagement researchers and environmental impact assessment experts. Two experienced arts facilitators led the retreat design and facilitation, supported by project team members. The 4-day climate communication retreat brought 20 young adults (21–29 years old)

from across Europe together in St. Gilgen, Austria, April 2018 to co-produce their own climate communications through interdisciplinary and multidimensional learning, mixing expert communication and scientific inputs with peer-to-peer learning. Participants identified their climate communication group projects during the retreat, then worked remotely on these with their peers post-retreat, with ongoing input from the project team.

Recruitment was through an open call across social media and professional networks, inviting applicants to write 150 words (in English), or through other communication formats, explaining their wish to participate. We had 400 applications for 20 funded places. As sustainable travel was part of the funding criteria, 20 participants from European countries (Austria, Germany, UK, Netherlands, Finland, Belgium, Sweden) were selected, representing mixed levels of climate knowledge or engagement −10 were characterised as early journey, 10 as highly engaged - and a broad spectrum of communication and action skills. These included NGO and grassroots climate activism, advertising and social media communications, communication and psychology research, business consultancy, visual and performing arts, community organising and governmental communications.

The participants comprised 12 women and 8 men, with the majority white european (85%); reflected in the broader applicant pool. It is important to note the privileged racial and educational demographics of the group, with most already engaged in climate action through work, volunteering or education. As the retreat was delivered in English, this also favoured English language proficiency. Whilst all participants expenses were funded by the project, the time resources required − 2 days travel and 4 days at the retreat –favoured those without care or family responsibilities, and a working environment supportive of time away/taking leave. These limitations will be reflected upon.

Retreat methods

The retreat's structure and content was underpinned by the transformational learning principles of interdisciplinarity, multidimensionality, collaborative project-based learning, reflexivity, action-oriented, active participation and the power of language/framing (Sterling, Dawson, and Warwick 2018, Eilam and Trop 2011), which we call communication. Multiple learning faculties were engaged, including the 'rational and cognitive, experiential, intuitive, relational, emotional and embodied' (Sterling, Dawson, and Warwick 2018, 334–335). Climate communication – as a constitutive aspect of cultural meaning-making and communicative action on climate change (Carvalho, Russill, and Doyle 2021) – was central to the design and content of the retreat, underpinning all learning principles. The retreat design was thus structured around the following objectives: 1) Explore climate change as a set of sociocultural meanings and communicative practices; 2) Foreground embodied and collaborative learning and sharing practices; 3) Co-create climate communications as a form of meaning-making and creative action. Drawing upon the table format of Bentz et al. (2022), Table 1 shows the methods and their relation to the transformational learning principles we used in the retreat, drawn from the academic literature.

The overall goal was for the young people to co-create climate communications with their peers, choosing any aspect of climate change to 'enact new communications strategies' (Sterling, Dawson, and Warwick 2018, 337). This was supported at the retreat through expert taught sessions on climate communication research and climate media formats. Sessions thus explored how values and frames shape climate communication and audience engagement; how storytelling, hope, humour and emotions can be effective climate communication strategies; the importance of linking climate change to social justice; communicating positive alternative futures; and the effectiveness of different audio-visual media formats for climate communication. Participants also shared and evaluated a range of existing climate communication examples they had chosen prior to the retreat (Figure 1), enabling communication learnings to be applied. Following this, an afternoon was set aside for the group to brainstorm communication project

Table 1. Methodological approach of climate communications retreat.

Objectives	Methods	Principles of transformational learning
1. Explore climate change as a set of sociocultural meanings and communicative practices	• Personal climate storytelling through objects • Expert presentation on climate science and Austrian impacts • Expert presentation on visual multimedia climate communication • Expert presentations on climate communications research • Discussion on decolonising climate movement through communication examples • Participants share/discuss own examples of effective/ineffective climate communications • Co-create a set of climate communication principles	• Communication, experiential, emotional, • Cognitive, rational, emotional • Cognitive, communication • Communication, cognitive • Communication, active participation, experiential • Communication, active participation, experiential • Communication, active participation, collaborative project- based learning, relational
2. Foreground embodied and collaborative learning and sharing	• Collectively agree a shared set of group rules • Buddying up system • Individual reflective journaling • Sharing existing skills sets with each other • Joanna Macy's 'Truth Circle' • Co-create a set of climate communication principles • Collective sharing of feelings (*impromptu*) • Group hike • Collective music-making night • Write collective manifesto on climate justice (*impromptu*) • Final night 'ceilidh' and dancing by the lake	• Active participation, relational • Relational • Reflexivity • Cognitive, relational, experiential • Active participation, intuitive, emotional, relational, embodied • Communication, active participation, collaborative project- based learning • Relational, emotional, intuitive, reflexivity • Embodied, relational, experiential • Embodied, relational, experiential • Intuitive, cognitive, active participation, communication • Embodied, relational, experiential, active participation
3. Co-create climate communications as a form of meaning-making and creative action	• Co-create a set of climate communication principles • Identify climate themes in small groups and work on climate campaign ideas • Test first draft ideas with peer group and project team for feedback • Write collective manifesto on climate justice (*impromptu*)	• Communication, active participation, collaborative project- based learning, relational • Cognitive, collaborative project- based learning, relational, communication • Collaborative project- based learning, relational, active participation • Intuitive, cognitive, active participation, communication

ideas, then a full day to co-create a climate communication campaign idea with their chosen group. Participants knew in advance that they would also work on their communication projects post-retreat to make a final product, and would receive financial support and mentoring.

The retreat was structured incrementally to increase young people's knowledge, build confidence, create a safe space, support peer inspiration across the early journey and more experienced climate activist group, and enable flexibility for intuitive responses. The educator role needs to move away from authority figure to 'catalyst, mentor, provocateur, and, to some degree, also that of peer within the learning community of which they form a part' (Sterling, Dawson, and Warwick 2018, 339). The facilitators used Joanna Macy's (1998) truth circle on the second evening, with feelings of climate fear, sorrow, anger and emptiness shared by everyone, leading to quick and deep group bonding. During the retreat an external event occurred that emotionally impacted participants; the suicide of US LGBT lawyer, David Buckel, who set himself alight in protest about fossil fuels and climate change (Conroy 2019). Time was set aside to emotionally explore this as a group.

Individual semi-structured hour-long interviews were undertaken with all 20 participants at two moments: 1) pre-retreat to explore existing motivations for climate engagement and 2) 6 months post-retreat to explore longer-term influence on their climate learning and engagement. A focus group was also conducted on the last day of the retreat to capture immediate reflections.
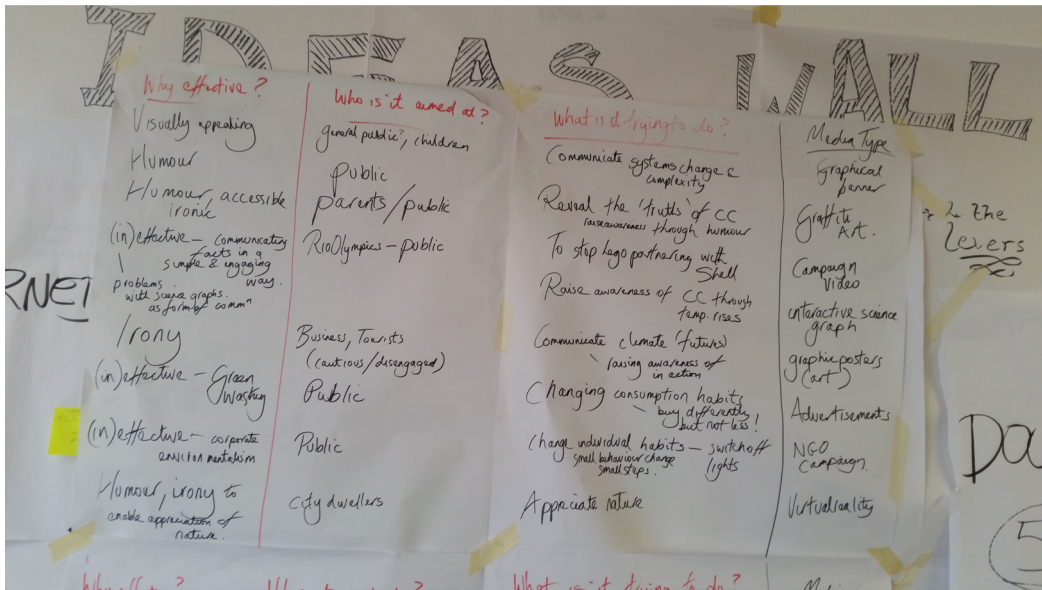
Figure 1. Discussing youth climate communication examples.

The following analysis evaluates the transformational process through critical reflection on the relationships between retreat content, participants' experiences' and learning outcomes. We focus upon the richness of participants qualitative responses, using numerical results only where appropriate. Names are anonymised and participant consent has been given. HE indicates Highly Engaged participants; EJ indicates Early Journey; focus group quotes are FG. We begin with a short reflection on motivations to act from pre-retreat interviews, then focus upon two emerging themes from the post-retreat interview data and focus group: relational experiences and learnings between participants; and the interdisciplinary and multidimensional retreat content. We then evaluate transformative experiences.

Results

Pre-retreat

Motivations to act

Pre-retreat interviews identified the importance of mediated communication and everyday social relations in young people's initial motivations to act on climate change. Media inspiration came from individuals in journalism – "[Naomi Klein] wrote about climate change in a way that was suddenly very relatable, very human, very emotional' (Zoey/HE) – broadcasting, and entertainment celebrities. Inspiration through social relationships included peers, family members, school/ university educators and work colleagues. The importance of being part of a group was central to moving from inspiration to self-efficacy – 'the sense of collective self-efficacy in actions' (Erik/HE) and 'working together as a team' (Poppy/EJ). Young people's feelings about climate change were complex. The majority experienced deep emotions – 'Sometimes I am a bit depressive' (Saskia/EJ) - and contradictory feelings – 'I feel emotionally positive but realistically critically negative' (Ines EJ). For everyone, communication was key to raising awareness, inspiring others, telling different stories (through arts), having conversations and reaching out to different people. Communication was particularly important for half of the group not brought up in an environmentally supportive family, whilst the HE group were able to link climate to social justice issues.

Overall, young people highlighted the importance of mediated communication, everyday social relations, collective action, and diverse forms of communication for climate engagement, whilst navigating complex emotions and understanding the need to address climate change by linking to other social issues.

Post-retreat

Relational experiences and learnings between participants

Collective experiences and peer-to peer-learning. Post-retreat, the strongest feeling participants expressed was the bond felt with others at the retreat, creating a strong sense of shared community and belonging, echoing climate activists (Haugestad et al. 2021).

> I discovered a whole community of like-minded people in other parts of the world that I feel like I belong to now. (Zoey/HE)

> I feel very happy that we bonded so quickly and we now have a network of people. (Yara/EJ)

Collective self-identification as the 'St Gilgen Climate Collective' signalled this bonding, cemented further through the group's impromptu creation of a manifesto (see Figure 2) stating, 'The language of climate change and climate justice can no longer be separated from that of solidarity with oppressed people and the struggle for human rights' (St Gilgen Climate Collective 2018). Strong group identity thus motivated participants to create intersectional communication about climate and social issues.

Post-retreat, many felt they could easily catch up with everyone in the group, perceived to be only phone call or click away. Most of the participants followed each other on facebook and/or Instagram, considering it a benefit: 'to see everything that is happening all over the world, or all over Europe from other people's social media pages' (Poppy/EJ).

Whilst shared climate concerns created strong group identity, underpinning this was diverse perspectives on climate action.

Figure 2. The 'St Gilgen Climate Collective' collaboratively writing their climate justice manifesto.

> [B]eing in a room with such diverse young people from all different backgrounds tackling climate change from different perspectives. I think maybe opened up my perspective. (Charlotte/HE)

> Just being able to see, from someone who has their own NGO…to people who work in communications, to people who hold camps in Germany…it made learning and sharing stories with others quite interesting. (Maria/HE)

Participants were also inspired by those with different world views and climate action experiences.

> Erik's work with [direct action group], in terms of putting your body to the line like going against companies rather than doing it from the academic side was very inspiring…Because that is something I always feel I am lacking. (Einer/HE)

> I was inspired by how people had their different approaches to work on the topic and a lot of them seemed like they actually live what they are doing. (Heidi/HE)

> [Maria] has experience from her work, which sometimes opens up our comfortable Western European cultural vision. (Erik/HE)

This diversity contributed to the whole group being viewed as inspiring, demonstrating the significance of participants' similarities and differences for a/effective group bonding and learning.

> I want to acknowledge that energy, or how I have been inspired by everyone. (Poppy/EJ) FG

> almost everyone was inspiring. (Charlotte/HE)

Yet one participant noted the lack of diversity in terms of participants being 'well-educated, sometimes slightly middle-class backgrounds - which is something everybody kind of had in common in regards to the retreat'. (Poppy/EJ).

Sharing complex climate emotions. Many participants, particularly women, said the retreat was an emotional journey.

> I actually found it very emotional experience. (Ines/EJ)

> the emotions connected to this retreat. (Liv/HE)

> it was quite emotional for me, way more emotional than I expected. (Freya/EJ)

Many others foregrounded the truth circle as a defining moment - a method most identified in interviews – where sharing complex climate emotions bonded the group quickly and deeply.

> I found [the truth circle] very powerful. The fact that we were a number of people that never met each other before and we shared a lot. (Ines/EJ)

> it was cathartic but also difficult. But I think it was also important to go deep. (Anders/EJ FG)

> it was an opportunity to get to know people's vulnerabilities…That brought the group closer together. (Maria/HE)

> I had the feeling I can also allow grief, and anger and also the doubt. (Erik/HE)

Talking about uncomfortable feelings of anger, hopelessness and despair allowed the ongoing 'sharing of grief and emotions about the work we are doing' (Heidi/HE). Creating a space for group reflection following the news of David Buckel's suicide enabled Heidi (HE) to tell her friends 'how we collectively dealt with the news about the person who killed himself', enacting Nairn's (2019) recommendations for collectivising despair.

Collective validation and deep group bonding experienced by participants' emotional sharing also impacted longer term learnings. Heidi (HE) stated that in her own practice she would 'create more spaces to allow emotions, where it is also fine to have negative emotions and not

just laugh always'. Another experiencing burnout from their involvement in frontline climate activism (Budziszewska and Głód 2021) found that 'the retreat itself has strengthened my inner emotional strength' (Erik/HE).

Interdisciplinary and multidimensional retreat design

Reflexive inspiring space(s). The geographical and reflexive spaces of the retreat were referred to positively by all participants, supporting the importance of the social environment for learning (Kowasch et al. 2021). Time away from everyday life allowed for personal reflection and relational connections.

> I found it really important to have the time and the space to think about these issues with other young people…it felt like a very creative space, where we were given a lot of freedom to work on ideas. (Ines/EJ)

The beauty of St Gilgen in the Austrian mountains was inspiring for all (See Figure 3); promoting connections with people and nature through embodied experiences that were long term.

> St. Gilgen is beautiful….this was not just a retreat talking about the environment, but you were in such a serene place where you could hear birds tweeting, where you can just sit and immerse…a safe space was opened. (Maria/HE).

> [T]he beautiful place and the nice people and the group…. how strong it connects you to nature and people and life. (Ivo/EJ)

> I actually very often think of the times back in the mountain and at the lake and about the lectures and the workshops and the seminars, as well as just the time sitting on the platform at the lake looking at the nature and reflecting about everything we talked about in the workshops, but also all the personal conversations…That was very inspiring for me. (Freya/EJ)

Figure 3. Collective group bonding in the inspiring setting of St Gilgen, Austria.

Multidimensional experiences and interdisciplinary climate learning. Participants talked to their friends and family about the multidimensional aspects of the retreat; the mixture of embodied, emotional, cognitive and action-oriented experiences (Sterling, Dawson, and Warwick 2018; Eilam and Trop 2011).

> [I] emphasized the good combination of actually making a product and really something tangible rather than just talking about it….[and] the emotional side or rather the wholistic sort of approach. (Einer/HE)

> It was the mixture of swimming with people in the ice-cold water in the mornings and then coming together…to look at topics and current research results. (Erik/HE)

Interdisciplinary project team presentations on climate science and climate communications were highlighted by many as contributing to the wholistic experience. Erik (HE) said, '[the] super motivated people, with up-to-date scientific research findings, how to communicate, with exciting campaigns, with new projects… I felt was empowering'.

The importance of communication to climate understanding and action (Carvalho, Russill, and Doyle 2021) was highlighted by most participants as 'really really important!' (Charlotte/HE). Communication was considered as awareness raising – 'to spread the word as much as possible' (Poppy/EJ) –and as culturally constitutive of climate meaning-making, engagement and action.

> the issue we are having today is not a scientific one, it is actually communication (Ben/EJ)

> I believe that just by changing some words or phrases you use you can really help to change people's mindsets and make them look at the world and their actions differently. (Tess/EJ)

> it is 100% how you communicate to people, how you engage the audiences and how you inspire behaviour change through communicating messages. (Charlotte/HE)

> how do you tailor campaigns according to the audience you are trying to reach, because when it comes to climate change it is one issue that hits the core of various classes, various races (Maria/HE)

Many said that the retreat had given them new communication ideas, including relating climate change to interconnected issues like migration, engaging people through humour (identified by 4 EJs), positive messaging (identified by 3 EJs) and values, as well as reaching different audiences not in the climate sphere. How we live our personal lives was perceived 'as a form of communication' (Ivo/EJ).

Collaborative project-based communication. Utilising the learning from the taught and participatory climate communication sessions (see methods), the young people co-created a set of communication principles to help develop their climate communication projects, foregrounding storytelling, cultural values, everyday life, emotions, humour, interactivity and action-oriented. Five group project ideas were generated at the retreat: low carbon travel, ocean acidification, global climate justice, reframing low-carbon lifestyles and free public transport. Following in-situ feedback, and with financial and mentoring support provided by the project team, four of the five groups developed their projects remotely for 2 months (one had withdrawn due to time constraints). Table 2 shows the four group projects, and Figure 4 the campaign logos produced post-retreat. The groups then collectively voted for the projects that were most developed to receive additional funding for further development and implementation. 'Vojo', 'No time to waste' and 'Young humans of climate change' all received funding, although, due to other commitments, only 'Vojo' and 'No time to waste' were able to utilise this opportunity.

Whilst all five project group ideas generated at the retreat had access to mentoring and finances to help their development post-retreat, some of the groups 'lost momentum' (Erik/

Table 2. Young people's collaborative climate communication projects.

Campaign title	Aim	Story/message	Target group	Communication format
Vojo	Promote low-carbon travel through an attractive, informative web-platform set up to expand into an inter-modal, low-carbon route planner	Alternatives to flying are not out of reach (budget- and time wise) for young adults	Concerned young adults with an above average level of climate consciousness	Animated video and web platform
Sea it, heal it	Bring attention to the issue of ocean acidification through a human context	The ocean is like the human body and needs to be healthy	Young adults	Interactive advert with gaming element
Young humans of climate change	Use narratives of young climate leaders around the world to inspire action	You can make a difference and you are not alone.	Concerned young adults that do not know how to engage with climate change yet	Web platform
No time to waste	Provide a new frame for conversations about climate by thinking about how we use our time, what we value most in life and how we frame success	Low-carbon happiness is achievable. You just need to re-think some time-consuming, expensive and unsustainable behaviour traps.	Successful, hedonistic, consumption-oriented young adults	Postcard and social media campaign

Figure 4. The final co-created climate campaign logos.

HE) due to busy everyday lives and limited time resources. This led to disappointment and frustration that some groups couldn't fully develop their projects, despite making 'money available for these projects, because that's usually the point, that there would be a lot of

ideas, but there is no money' (Saskia/EJ). Despite these limitations, participating in the collaborative climate communication project increased group bonding and impacted some participants sociocultural understanding of climate change. A 'Vojo' group participant said, 'it's not something I would have thought about before' (Soren/EJ). A participant of 'No Time to Waste' said it was 'a first step maybe to go from the more theoretical to the practical side' (Tess/EJ), whilst the project's questioning of cultural values made another 'feel much more passionate about cultural change' (Emma/HE). Others highlighted the value of the process of creative and collaborative learning (Dolejšová et al. 2021), not just the end project goal: 'I still feel I gained a lot through this weekend and I use it in my everyday life, just the experiences and the knowledge I gained' (Freya/EJ). Thus, whilst transformational learning benefits from being project-based and action-oriented, the collaborative process itself can be as valuable a learning experience.

Transformative experiences

Changing world views and increasing efficacy
Participants commented upon their own changing views that have impacted their climate actions.

> this group of people that I did not know until then. With perspectives that opened up new things for me. (Erik/HE)

> I feel that something has changed in my mind perhaps… I am not at a point where I am really getting into action…. But I have been preparing mentally to do it. So it has inspired me and it has changed my mind set…the retreat has helped me in that process. (Tess/EJ)

> I was not involved in climate action before, but I think it really changed the way I think about things, the way I think about what I want to do with my life and my career as well…In that sense the retreat had a huge impact on me. (David/EJ)

The majority of participants expressed an increased sense of self-efficacy, referencing the emotional dimensions of the retreat, a renewed sense of personal commitment and increased self-confidence, particularly for the early journey participants.

> it gave me more zeal for the fight, so to speak. (Einar/HE).

> I did not express my views to others as much. But after the retreat it almost gave me the confidence to stand up for what I believe in…… I am quite confident now with saying that to people, whereas before I did not really believe in myself. (Poppy/EJ)

Self-developments were directly supported by deep emotional group connections. The combination of individual reflections and group experiences contributed to an increased sense of efficacy. Efficacy encompassed being hopeful about social change, through the relational and action-based experiences of collective group sharing and collaborative manifesto writing.

> coming here and meeting everyone, and getting that kind of emotional contact with the group and seeing that energy from other people gives me more confidence to imagine a different future and a different political future. (Ines/EJ) FG

> I think the whole community made us feel that we are not alone in this topic and that we can count on each other and it felt really empowering to feel this community that came together in St. Gilgen. (Saskia/EJ)

> the moment that we were all working together when we pretty much dropped what we were doing to write the manifesto. I think that gave me a lot of hope and belief. (Emma/HE)

Two highly engaged participants noted a reduced sense of efficacy post-retreat due to the difficulty of maintaining connections to others because of their jobs. Challenges integrating the

retreat's learning with 'other everyday life or [existing] commitments' (Erik/HE) highlights the difficulties for time/space specific retreats. These difficulties were also highlighted more generally by others, with social media going some way to maintain these connections.

Lifestyle and behavioural changes

The retreat impacted individual lifestyles, particularly early journey participants. Most significant changes were to people's diet and transport. The climate impact of meat/dairy was discussed in the expert presentations at the retreat, supported by the all vegetarian/vegan catering, but not explored in any of the co-created climate campaigns. 7 (5 EJ) out of the 20 participants said that they were eating less or no meat since the retreat.

> I think I became far more aware of…meat eating. I mean I have always been aware of it…but I think climate has now very much taken a role in that. (Soren/EJ)

> I was almost vegetarian and now I am like fully vegetarian and on my way to vegan' (Freya/EJ)

> I try to stick more to the idea of being vegan, to the idea of not flying…I am really more convinced that I really want to do that. (Tess/EJ)

Commitment to less or no flying and the use of more public transport were identified by 10 (8 EJ) participants.

> before the retreat I would have just straight gone on sky scanner, I would never have thought 'let me try and look an alternative way of travelling'. That would never have come into my mind. (Poppy/EJ)

Individual behavioural changes were more clearly noted by the EJ group. These also included consuming less, and not having children. More intrinsic value changes related to inner well-being also occurred.

> I was quite inspired by people doing yoga during the retreat…to really take time for yourself and be in the moment. (Tess/EJ)

> I found myself wanting to really live in the moment and enjoy every day I have more than before. (Ivo/EJ)

> the experience changed me and made me a better person…that's the more personal and intrinsic kind of changes. (Emma/HE)

Many communication principles learnt on the retreat were applied in work settings across both groups. Two EJs incorporated Meatless Monday at work. Another contributed to a national governmental food waste campaign; 'I remember actually going into the briefing and saying: in this retreat I went to in Austria' we explored how 'humour is the best way to communicate climate change' (Poppy/EJ). A HE participant working on a climate project for an international environmental NGO also noted that following her feedback:

> they actually realised that they hadn't thought about investing in communication, in as much as they wanted to reach out to young people…. this year we made a video, where young people were sharing why they are passionate about the environment. (Maria/HE)

Discussion

Through young adults' experiences of a participatory climate communications retreat (see Table 1), a number of key factors shaped young adult's transformative learning. Overwhelmingly, young adults appreciated the wholistic and interdisciplinary retreat structure, enabling multiple engagement forms and integrated learning. This increased their self-efficacy and shaped their climate engagements through emotional strengthening, collective identity, enhanced climate communication knowledge, and individual behaviour and intrinsic value changes. This indicates

the importance of creating climate learning experiences that enable young adults to engage through multiple faculties (Sterling, Dawson, and Warwick 2018) and promote sociocultural understandings of climate change through interdisciplinary learning and creative engagement (Bentz et al. 2022).

Like youth climate activists, creating a sense of community and collective identity was crucial for young adults' transformational climate learning, critical for motivating young people beyond specific climate strikes/protests. Deep emotional sharing that attends to the complex range of emotions young people feel is central (Ojala 2012; Nairn 2019). Hearing expressions of doubt and worry from all participants, facilitators and the project team, opened up vulnerabilities which enabled group trust to develop quickly. Forging deep relational connections enabled a spontaneous collective action-based response through the collaborative manifesto. This integrated the retreat's interdisciplinary learning by communicating systemic relations between climate and social justice. Creating learning experiences that explore individual climate emotions collectively enacts Nairn's (2019) call for avoiding individual despair.

The strength of the collective group identity, forged through the specific time/space of the retreat, provided longer term emotional support for the young adults' post-retreat. We thus addressed the need for sustainability education 'to nurture transformative learning experiences that can heal, empower, energise, and liberate potential for the common good' (Sterling, Dawson, and Warwick 2018, 324). These experiences, however, require very skilled and intuitive facilitators to create a safe and trusting space. The arts facilitators who led the retreat were exemplary in this regard. This also highlights the care, trust and time needed when working collaboratively with partners across academic and non-academic sectors to create such transformative experiences.

Whilst collective group identity was strong, young adults were inspired by their peers' different views and experiences. Peer-to-peer learning was strong. Transformative learning experiences thus benefit from bringing a range of young adults together under a common goal that creates collective identity through a shared purpose but encourages different experiences and perspectives. The main differences in transformational learning between the highly engaged and early journey participants were in the changes to individual behaviours for early journeyers, such as diet and transport, as well as increased sense of self confidence. Some retreat participants did highlight the general homogeneity and privilege of the educated middle-class participants, indicative of the wider youth climate movement (della Porta and Portos 2023). This relates to the time demands of the retreat that unwittingly privileged university students or those whose work commitments supported attendance, also reflected in the broader pool of applicants. We thus recognise the need for creating transformative learning opportunities for more educationally and racially diverse groups of young adults.

Where transformative climate learning takes place is key to the development of new ideas (Kowasch et al. 2021). St. Gilgen's beautiful mountain lake setting contributed to participants' embodied experiences, whilst the ability to step away from everyday life for critical and emotional reflection was central to transformational learning and deep group bonding. Transformational learning experiences thus need to create spaces for self and collective critical reflections to enable multidimensional learning and engagement beyond everyday life demands, with emotional work centred. Given the time restraints and funding dependency of such retreats, however, seeking a shared external space nearer to people's everyday lives could be a productive alternative (Doyle 2020).

Transformational climate learning projects overlook communication as cultural meaning-making that shapes climate action (Carvalho, Russill, and Doyle 2021; Doyle 2020). Addressing this gap, the retreat centred creative communication through personal storytelling, research presentations, participant examples of climate communications, and the co-created climate communications projects. All young adults demonstrated increased understanding of climate communications as shaping climate knowledge and action, enhanced by the collaborative project-based learning.

Post-retreat, many applied 'new communication strategies' (Sterling, Dawson, and Warwick 2018, 337) in their work environments, with some experiencing more intrinsic value changes. Communication between participants, some of which focused on climate communication, also constituted civic action (Carvalho, Russill, and Doyle 2021), shaped by collective interdisciplinary learning. The collaborative manifesto foregrounding climate and social justice as interdependent evidenced this.

Whilst the retreat was a profound experience for all participants, challenges lay with the continuation of co-created projects post-retreat. Intentionally built into the retreat design to facilitate collective dialogue and project idea refinement, in practice this was impacted by participants' daily lives and physical distances between group members, leading to some expressions of disappointment and frustration. Future retreats might foreground project-based learnings that begin and end within the retreat timeframe. Furthermore, whilst the deep emotional connections participants forged helped maintain strong group identity post-retreat, it is important to consider the longer-term support. The project team maintained online group meetings with all participants for over a year after the retreat (and longer for some through mentoring). However, being able to meet collectively again in person – which all participants expressed a desire for - would have enabled solidification of group identity and follow up learning. This is a challenge of time specific project funding. Furthermore, whilst participants were inspired by and learnt from peers different from themselves, there was a homogeneity of educational and racial privilege amongst the group and project team. Future retreats and transformational learning experiences with young adults would benefit from a diversity of participants across race and educational experience, as well as dis/abilites, to prevent entrenchment of privileges.

Conclusion

As the climate crisis deepens, creating opportunities for transformational climate learning that facilitates interdisciplinary understandings, provides multidimensional experiences integrating emotional and imaginative faculties, and collectivises young people, is crucial for social change. Transformational climate learning that utilises creative, embodied and participatory modes can help move beyond cognitive limitations (Eilam and Trop 2011) to create such multidimensional engagements. Yet, despite a recent focus upon creative arts, communication as a meaning-making practice (Carvalho, Russill, and Doyle 2021) has been largely absent from transformational climate learning. Addressing this oversight, this article has shown the importance of climate communications to transformational learning through an experimental retreat for 20 young adults from Europe that situated climate communication as meaning-making (knowledge) and practice (action), through a wholistic learning experience. We found the combination of peer-to-peer learning, collective identity, emotional sharing, reflexive spaces, inspiring learning environment, interdisciplinary learning, multidimensional experiences, and collaborative project-based communication were central to transformational climate learning. The retreat enhanced participants' sociocultural understandings of climate change, and climate communication as a form of meaning-making and communicative action. It increased young adults' self and group efficacy through collective bonding and emotional sharing, and changed their behaviours and intrinsic values. As such, climate communication can offer an important focus for transformational learning experiences, enabling a simultaneous focus upon the cultural meaning-making of climate change *and* the practice of collaborative communicative action. Creating such participatory learning experiences for young people across all ages and demographics, however, is crucial to widening opportunities for collective climate engagement beyond participation in climate youth strikes, as well as avoiding re-entrenching privileges. Such work needs to be done carefully and sensitively, through trusting collaborations between academics, non-academics and young people themselves.

Note

1. This retreat was part of a broader funded project called *Cli-Mates- exploring the role of social norms, self and group efficacy for mainstreaming climate action among young adults,* funded by Austrian Climate Research Programme (2017-2019). The research has gained ethical approval from the University of Natural Resources and Life Sciences, Vienna/Austria. All participants have given informed consent to the research.

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