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Research article

De-bordering solidarities: using eco-craftivism as an eco-social pedagogy in primary education

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Abstract

Critical social pedagogy has developed in a manner that is both complex and situationally embedded, but manifesting common threads of inclusion, participation and care in pursuit of social justice and well-being. Solidarity sits at the heart of the critical social pedagogical project, though not without contestation around the nature of its deployment. Eco-social pedagogy broadens the concerns of critical social pedagogy, foregrounding the importance of ecological solidarities, in conjunction with intra-human solidarities, in recognition of the interdependency of social and ecological needs. This article argues that eco-social pedagogy would benefit from an even fuller 'de-bordering' of solidarity, incorporating a third solidarity – a solidarity with *things*. Societal transformation for a just sustainability can be supported by an eco-social pedagogy that builds learning opportunities at the intersection of these three solidarities. Drawing on data from a project with 120 UK pupils, aged eight to nine, we discuss the role

that eco-craftivism may serve as an eco-social pedagogy, functioning as a catalyst for developing holistic, de-bordered solidaristic understandings, motivations and actions in the face of our current ecological and social justice crisis. We demonstrate how a solidarity with things can build a more holistic and collective narrative, serving as a gateway towards ecological and intra-human solidarities.

Keywords eco-social pedagogy; solidarity; primary education; craft; craftivism

Introduction

Preventing, mitigating and/or adapting to our ecological and justice crisis is imperative and requires the deployment of all available tools to raise critical consciousness and leverage transformative change. Education has an invaluable role to play in this regard. Pupils and teachers can become change agents in empowering sustainable knowledge, attitude and action (Winter et al., 2022). We have witnessed significant growth in educational interventions in respect of the global ecological crisis (Monroe et al., 2019). But to effectively and collectively engage a diverse range of pupils and teachers in the face of our ecological and justice emergency requires us to mobilise pedagogies able to advance socio-political literacies fit for the challenge of producing active and transformative citizens. Eco-social pedagogy (ESP) promises a potent framework for leveraging such literacies and related solidarities, across both ecological and social domains.

ESP, with its emphasis on integrative approaches and its foregrounding of action for change, is well placed to catalyse alternative approaches to learning, including those of art and craft. Considering arts in relation to environmental issues is still a recent phenomenon, with Curtis et al. (2014) calling for further studies on arts and sustainable behaviours. Creativity in art and craft can serve as an enabler of engagement, action and prefiguration (Vesterinen and Ratinen, 2023).

We explore the role of craft in unlocking transformative potential, generating new values and skills to support sustainability-related goals, including those of the United Nations' Sustainable Development Goals (<https://sdgs.un.org/goals>). We examine how eco-craftivism may be deployed to enhance pupils' solidarities in the face of our ecological and justice crisis. We embrace ESP's conjoining of ecological and social solidarities but argue for the importance of recognising a third solidarity that is key to leveraging a just and sustainable future; namely, a solidarity with things. By 'things' we refer to human-made artefacts, be they raw materials, recycled materials or the manufactured products of materials (such as clothing, toys or packaging). Eco-craftivism, in deploying such things, enables material literacies and solidarities that in turn act as gateways into a triumvirate of interconnected solidarities.

This article draws on a case study of 120 children aged eight to nine in two primary schools in the UK and asks:

1. How can eco-craftivism, deployed in a classroom of children aged eight to nine, advance our understanding of ESP?
2. How might a de-bordered understanding of solidarities assist us in understanding learners' engagement with the climate crisis?

The article commences by building a theoretical and conceptual framework for understanding the role played by eco-craftivism in catalysing solidarities, with particular emphasis on the gateway role played by a solidarity with things (in this instance, by using selected recycled materials and 'waste' products – specifically here, copper, cardboard and socks). It then outlines the methodologies adopted within the project before exploring data concerning two outcomes of our intervention, related to material literacies and hopeful emotions. The article argues for the value of an alter-materialism of literacy and care towards such things, one that is concerned to appreciate the values embodied in those things, as a platform for building durable, reciprocal, solidaristic relationships with things, other humans and the 'more than human'.

De-bordering solidarities through eco-craftivism in primary education

Education for a sustainable and just future

Education has an invaluable role to play in the prevention of, mitigation of and/or adaptation to our ecological crisis. We agree with Kumar et al. (2023) that 'education is key in people increasing their climate literacy and understanding, and hence responding to the impact of global warming and climate change' (n.p.). Pupils and teachers can function as important change agents, with schools being a place for catalysing and multiplying knowledge, attitudes and action for transformation to a sustainable and just future (Winter et al., 2022). Multiple reports from the UN Intergovernmental Panel on Climate Change indicate the importance of education in supporting carbon-neutrality and climate resilience (Kranz et al., 2022).

Monroe et al. (2019) note that there has been significant growth in educational interventions concerned to engage pupils in learning about the global ecological crisis, though not without limitations. While some stakeholders seek to press the accelerator on embedding education for sustainability, others are applying the brake. As a case in point, while Italy inaugurated compulsory inclusion of climate change and Education for Sustainable Development (ESD) from 2020, England reduced reference to it (Hollstein and Smith, 2020). Nor does inclusion guarantee a consistent outcome. In a report exploring how different states in the United States address climate change, 27 states scored a B+ or higher and six states received failing grades (National Center for Science Education & Texas Freedom Network Education Fund, 2020). Many teachers also feel unprepared to provide climate education (Howard-Jones et al., 2021). There remain many gaps in our research and practice knowledge, especially in relation to primary-school children (Ardoin et al., 2018).

Furthermore, while influential frameworks, such as ESD, may have great potential, they have also been critiqued for their methodological and behavioural individualism (Kranz et al., 2022). Kranz et al. (2022):

recommend a shift in teaching and learning about climate change towards political education in order to educate climate literate citizens. Such education moves away from a focus on the individual, and towards collective and meaningful measures that empower pupils to develop political knowledge and action about climate change as an expression of a more holistic understanding of the climate crisis, human nature, the natural world, and the interconnectedness of it all. (p. 29)

Such an education must also be action-orientated if it is to produce critical and engaged young citizens (Jensen, 2002; Vesterinen and Ratinen, 2023). ESP offers a platform for such an education.

Critical social pedagogy and its anthropocentric limits

Critical social pedagogy has enjoyed diverse empirical and philosophical orientations over time and across place (Hämäläinen, 2012). Social pedagogy is by its nature future-facing, inviting critical reflection on the past and present in order to catalyse new visions of a realisable future built on individual and collective flourishing – a flourishing that is dependent on universal access to rights and justice. Critical social pedagogy's vision of human flourishing has been informed by the legacy of Freire (2005) and Enlightenment humanism (Bowers, 2002) and assumes the transformative capacities of learning as a vehicle for social intervention in the name of human emancipation for well-being, inclusion and agency (Salonen et al., 2023). The *social* in social pedagogy signifies the importance of collectivist and solidaristic orientations, whereby individual enablement is understood as necessitating collective interventions and agencies (Salonen et al., 2023). Learning is best situated in and through relations with others and made meaningful through transformational action (Salonen et al., 2023). Social pedagogy pursues transformative learning spanning cognitive, meta-cognitive and epistemic levels (Salonen et al., 2023).

A principal limitation of critical social pedagogy has been its residual anthropocentrism and failure to sufficiently insist on the need for ecological solidarities (Bowers, 2002). It is in response to this critique that we have witnessed the emergence of an ESP that seeks to avoid not only critical social pedagogy's ignoring of the 'underlying cultural roots of the ecological crisis ... [but also its complicity] ... in reinforcing the patterns of thinking that further exacerbate it' (Bowers, 2002, p. 22).

Eco-social pedagogy

The nature and boundaries of ESP remain somewhat uncertain, both in and of themselves, and in their relationship to other parallel nomenclatures (Misiaszek, 2023). Here we will take ESP to be an umbrella term that includes, but could also transcend, planetary social pedagogy (Salonen et al., 2023) and eco-justice pedagogy (Martusewicz et al., 2021).

ESP is committed to overcoming the bifurcation of the social and natural 'worlds' (Salonen et al., 2023), recognising the simultaneously interdependent character of human life and planetary systems, for a holistic well-being (Salonen and Konkka, 2015). As such, 'ecosocial education has to be built on the understanding of eco-socialization, of the nature of the diverse relationships we have with other beings and how those relationships can be sustained' (Keto and Foster, 2021, p. 46). Humanity, simultaneously embedded as it is within social and natural systems, has an ethical obligation towards supporting planetary ecology for its own sake, but also as a means to advance social justice and cohesion. According to Bowers (2002), an ESP must also adopt 'root metaphors' that enable us to understand important diversities in systemic relationships between the natural and the social, and to value the variable wisdoms embedded within these relationships as they have developed across time and place.

Given the systemic orientation of ESP, a priority is placed on empowerment and action in learning, stressing the importance of relations of solidarity for system transformation for sustainability and justice (Salonen et al., 2023). Cognitive, meta-cognitive and epistemic learning, in dynamic interaction, 'bring forth new affective, intuitive, imaginative, and embodied knowledge' (Salonen et al., 2023, p. 627). Particular value is placed on collaborative, co-creative approaches to learning and acting, which research has shown to be key to developing sustainability competencies (Vesterinen and Ratinen, 2023). According to Salonen et al. (2023), sharing:

thoughts, emotions, and embodied knowledge through dialogue enables ... [pupils] ... to build new collective understandings and experiences of the world. Consequently, their transformational agency becomes stronger as they imagine alternative futures and take action together to create a better future. (p. 633)

Such an integrative, holistic approach to learning values interdisciplinary approaches that combine a range of domains of thinking and doing, from climate change science to political philosophy to art and craft. Creativity should be valued as a potent catalyst for engagement, action and prefiguration. According to Salonen et al. (2023), 'arts and creative working methods can strengthen pupils' transformational agency when they imagine alternative futures and act together for a better future' (p. 635). For Keto and Foster (2021), 'the processes of making and experiencing art can engage different sensibilities – rational, sensory, and emotional ... Therefore, art has a unique role to play in ecosocial education in uncovering hidden contradictions in thinking and building a sustainable future' (p. 46).

De-bordered solidarities

Intra-human solidarities

While acknowledging the dangers of 'parasitic' and other pathological solidarities (Gaztambide-Fernández et al., 2022), we nevertheless argue that solidaristic thinking, emotion and action remain fundamental to leveraging societal transformation for a just sustainability (Margonis, 2007). To be solidaristic is to engage in a 'praxis of standing up and standing beside' (Jennings, 2015, p. 6). According to Meacham and Tava (2021), intra-human solidarity is characterised by certain necessary conditions, phenomenologically speaking:

- a normatively grounded, though rationally based, motivation to take some responsibility, in support of an impersonal other, and in a manner that incurs cost/risk to the self, in recognition of shared goals and interests
- a tangible and durable reciprocity, or expectation of reciprocity
- a set of criteria for determining who can and who cannot be included in the solidaristic relationship
- the role played by social objects (for example, treaties, institutions, social networks, among others) in mediating solidaristic relations.

Russo and Tava (2023) have noted that in the light of our current ecological and justice crisis, solidaristic relations must also embrace an *ethics in scarcity*, where competitive struggle for resources is replaced by cooperative alternatives productive of fair distribution. Solidarities can be thought of as a 'good', as they 'motivate and facilitate collective action, risk-taking and longer-term political consideration and planning' (Meacham and Tava, 2021, p. 572), in the interests of justice.

Ecological solidarity

ESP requires us to challenge anthropocentric 'world-earth distancing' (Misiaszek, 2023) and bring into play solidarities with the 'more-than-human' (Abram et al., 2020). Within the 'humilocene', we are witnessing the emergence of a new anthropological humility in the face of the Anthropocene (Abram et al., 2020). Such *humilities* promise augmented ecological solidarities.

Thompson et al. (2011) define ecological solidarity as 'the reciprocal interdependence of living organisms among each other and with spatial and temporal variation in their physical environment' (p. 414). Jennings (2015) frames ecological solidarity as *standing up beside nature*. Here, standing up beside translates into *standing up for*, as a commitment to assist and advocate for the environment; *standing up with*, as a commitment to strive to enter into the life-world of the more-than-human; and *standing up as*, as an ontological appreciation of our dependence on, because of our embeddedness in, a complex life-giving socio-ecological system/organism.

Solidarity with things

We argue that a more comprehensive ESP moves beyond the important task of de-fragmenting intra-human and ecological solidarities (Salonen et al., 2023) to include a solidarity with things, in the form of human-made artefacts. Societal transformation for a just sustainability requires us to leverage sustainability-enhancing relationships with things. In the context of contemporary neoliberal capitalism and state-corporate managerialism, an ecocidal growth drive compels relentless expansion of extraction, production, distribution, consumption and disposal of commodity-things – commodity-things with which we are invited to build superficial and non-durable 'throw-away relationships' enacting 'criminal' ecological harm (Lynch et al., 2020). A sustainable and just transformation necessitates significant 'dematerialisation' of social life, as no conceivable level of ecological decoupling can render current levels of production/consumption sustainable (Jackson, 2017), but there is more to our relationship to things than dematerialisation.

From a practice-theoretical perspective, things 'constitute essential ingredients in the effective accomplishment of everyday life' (Watson and Shove, 2008, p. 69). Things are social entities 'that play an active part in the generation, stabilization, and reproduction of social order and sociality' (Preda, 1999, p. 349). Things are actors that inform or even prescribe the life that can be lived around them (Korn, 2015). Material artefacts invite empathic literacies and intelligences that facilitate developmentally important connections with our material and social worlds (Adamson, 2018). For the materially literate, things embody experience and competencies that await our comprehension (Adamson, 2018). Things are *meaningful* and, in multiple ways, facilitate the building of identities and our capacity to connect, human to human, evidencing our shared humanity (Adamson, 2018; Gauntlett, 2011). At the same time, they connect us to our environment. Importantly, 'one of the most significant aspects of material intelligence is that it can help us to make better choices about how we live on the planet' (Adamson, 2018, p. 7). By valuing material artefacts *more* we can consume less and better (Adamson, 2018).

We propose the importance of an *alter-materialism*, a relationship with material artefacts that recognises things as social actors and as bearers of multiple values (social and ecological) and as co-creators of reciprocal, solidaristic relations.

Craft as a domain for de-bordering solidarities

Craft is both a noun and a verb, capturing the processes, experiences, contexts and artefacts of making (Korn, 2015). Craft ranges from art-craft, to artisanship, to hobbyism and may embody creativities that are exceptional or 'everyday' (Gauntlett, 2011). Contemporary craft practice has been considered part of a broader 'making and doing' culture (Gauntlett, 2011). According to Korn (2015), craft as a creative practice comprises three key elements: discovery (developing and implementing new ideas),

embodiment (the physical manifestation of the crafter's intention and skill in the made object) and communication (as the object is interpreted by a respondent). The defining character of craft, as a creative practice, lies in its autotelism, as Csikszentmihalyi (1998) describes it – being an end in itself. For Sennett (2008), craft is defined by the practice of making something of quality for its own sake. Craft making has also been attributed with qualities of joy (Gauntlett, 2011), where craft expresses an 'urgent need to *make*, for the sake of the pleasure and understanding gained within the process of making itself' (p. 24, emphasis in original).

Craft is a conversation with embedded and embodied knowledges and competencies, and with the materials and the objects of our making (Korn, 2015). Craft invites a literacy regarding things, working in dialogue with the physical properties of the materials of one's craft (Korn, 2015). Craft involves thinking by doing (Sennett, 2008) – thinking in relation to an emergent object of making, through the medium of hands and tools (Korn, 2015). Through craft we connect (Gauntlett, 2011). Sennett (2008) sees craft as a form of citizenship. A person engaged in craft is envisioning a broader 'human potential' (Korn, 2015, p. 124) at the very same time as they are engaging in self-transformation (Korn, 2015). According to Treggiden (2022), 'craft offers not only a way of making, but also a way of thinking – one that is collaborative, inclusive and responsive to our changing natural environment' (p. 3). We argue that craft making and craft objects can invite a solidarity with things, but as a gateway to an ecological solidarity and a solidarity with other humans, in a manner that engages sustainability. In this way, craft, and more specifically craftivism, are powerful tools for an ESP.

Craftivism and eco-craftivism

Betsy Greer (2007) defines craftivism as an activity of 'engaged creativity' concerned to 'help make the world a better place ... craftivism allows practitioners to customize their particular skills to address particular causes' (p. 401). Even more succinctly, she refers to craftivism as 'creating something that gets people to ask questions' (p. 8). We define craftivism as a:

a long-standing, non-violent, 'quiet', participatory style of political activism, implicitly or explicitly embodying a DIY culture, in which available craft materials, skills, processes and spaces are creatively utilised by individuals or groups to mindfully produce aesthetically and symbolically significant cherishable objects (material and immaterial) that by their civic deployment are anticipated to trigger subversively progressive political impacts, from the personal to the global, in respect of a socially defined problem, and to give/provoke a sense of agency-through-making on the part of those who do, or might potentially, use craft in this way.

Craftivism appears to us as a manifestation of what Gauntlett (2011) sees as the inherently political nature of everyday creativity, where the creativity of craft 'leads to a whole new way of looking at things, and potentially to a political shift in how we deal with the world' (p. 19), and in particular is a recognition that 'human beings are *creative* and can work well together to do great things' (p. 20, emphasis in original). Eco-craftivism explicitly conjoins craftivism with ecological solidarity.

Methodology

This article draws on data derived from a 12-month project titled *Education in Primary Schools: Climate and Craft* (EPICC), funded and ethically approved by the University of the West of England, Bristol (RefCHSS.23.08.013). EPICC was a qualitative, multi-methodological project, deploying craft activities in the context of UK primary schools to explore how the creative methods of eco-craftivism might support interdisciplinary climate change education for children aged eight to nine, an age group often overlooked in the literature and policy. According to Bhattacharya et al. (2021), 'there is a need for more rich, mixed-methods, classroom-based research of curricular and instructional interventions designed to support pupils' learning' (p. 233). Our project comprised surveys with pupils; craft-making workshops (including craft-specific knowledge exchange pertaining to pertinent aspects of climate change), followed by craft-making practice (the latter recorded via table-top voice recorders); emotion wheels for recording pupils' responses pre- and post-craft workshop; post-craft focus groups with pupils; post-fieldwork semi-structured interviews with class teachers; visual methods (photographic documentation); and an end-of-project public exhibition of the pupils' work.

A total of four classes of children aged eight to nine, from two schools in the south-west of England, participated ($n = c. 120$). Three local craft makers from the Bristol Refugee Arts Collective and Global Goals Centre were recruited. Each maker delivered a distinct craft workshop, supported by the research team, respectively focused on the making of copper-wire bracelets as gifts, cardboard tangram puzzles to play with and sock puppets to use as characters to communicate thoughts/feelings on climate change. Each session included stories of material production through video, 3D models or images. Taking a social-constructivist approach to learning, we recognised that copper wire, cardboard and socks were all known objects to the children and so offered a familiar route into activities and learning (Pacini-Ketchabaw et al., 2016). Each class participated in three half-day workshops scheduled within their school timetable.

This article draws specifically on data derived from the six focus groups with pupils and the semi-structured interviews with class teachers. We chose focus groups because of the 'fit' between the associational context of the pupils' learning within the craft workshops and the social character of focus groups themselves (Hollander, 2004). Focus groups support the co-constructed nature of meanings within the context of associational groups (Hollander, 2004). Semi-structured interviews were deployed so that we might gather data fit for thematic analysis in pursuit of our research questions, while also allowing our participants to elaborate on their thoughts and experiences in a manner rich in life-world authenticity (Brinkmann, 2020).

We secured informed consent from all participants (including parental carers), including consent to use anonymised data for publication, using participant information sheets and consent documentation. The children were enabled to ask questions during a pre-workshop whole-class information exchange and were informed of their right to withdraw.

Data were collected via voice recorders, transcribed and rendered anonymous. The data were analysed thematically, using open thematic coding via the qualitative software platform Nvivo V12. The codes were generated collaboratively.

As climate and sustainability were themes already addressed within the schools, our project supplemented pupils' existing engagement with these issues. Nevertheless, we supported pupils to share their emotions, as climate change can prompt a negative affective response (Léger-Goodes et al., 2022), and signposted pastoral support available within the school. We provided debriefing time at the end of each event.

Eco-craftivism in pedagogical practice: what the pupils and teachers had to say

It is beyond the scope of this article to explore de-bordered solidarities across the triumvirate of domains. We will focus on a solidarity with things, understood as a gateway into ecological and intra-human solidarities. For the same reason, we will limit our data focus to the material and emotional literacies embedded in a solidarity with things.

Eco-craftivism: material literacies, solidarities and enchantments

Our eco-craftivist pedagogy provided pupils with literacies associated with the processual journeys undertaken by the recycled materials with which they were working, building links to ecological solidarities. According to one teacher, this pedagogy worked because our activities 'connected ... [the materials] ... with a particular process that ... [the pupils] ... could see the recycling or the reusing'. As a pupil reflected, 'I really enjoyed ... making the bracelet because of using all of the recycled copper ... it was a really good way to stop using as much processing'.

The material literacies foregrounded by our eco-craftivist pedagogy invited reflections by staff on how they might reconfigure the design of future lessons: 'we just thought, why are we using new wire and new plastic beads? Why don't we show them that we can actually reuse copper wire? And get wooden beads.' This is a positive result and indicates how the project supported teachers to feel more equipped to navigate learning in the field of sustainability – an area identified by research as lacking (Howard-Jones et al., 2021).

Where possible, we exploited the power of things as agents (Preda, 1999) to both represent and make concrete the interdependencies between humans and ecologies that are embedded in things.

One teacher reflected on the power of one of our craftivist's use of 3D objects (toy wooden trucks, and blocks to represent factories) to help visualise the journey taken by wood in becoming recycled cardboard, pointing to the value of telling a story 'with very physical items, and I think all children ... really gain from really having the practical bits of wood and seeing the wood go on a journey ... That was what pulled them into it ... it was far more real where Cardboard comes from – It's physically trees.' Preda (1999), working from a sociology of knowledge perspective, has pointed to the important role of things in making possible social order, a sense of time and power. By connecting pupils with these materials, we were enabling pupils to develop a more 'joined up', systemic understanding of the social order, the temporalities and the power embedded in the production, distribution and use of things, and the implications that this has for our relationship to people and planet. Within an ESP, things can invite reflection on materials, while materials can invite reflection on the ecological matter from which these materials are purposively made, and on the people and processes associated with that making (Adamson, 2018; Korn, 2015). In response to the story-telling of things' journeys, pupils discussed environmental issues such as deforestation and extinction. As one pupil reflected, 'using the sock puppets allowed us to have a bigger understanding ... it was very good to use the sock puppets to talk more about garments ... it encouraged children to talk more about the environment and what's happening in a different way'. We see here signs of ecological solidarity in the form of a *standing up for* nature (Jennings, 2015).

Pupils were very much aware of the ecological implications of failing to intervene in the waste stream via recycling: 'so with the sock puppets, instead of like throwing them away because they have a hole in them or because they don't fit you anymore, just make them into something else instead of throwing them into the landfill, the dump.' There was a recognition of the importance of repair, and the role of craft in this respect. As one teacher reflected, 'it's very concrete – this is what we could do, how you can mend stuff'. Repair has become an important practice and movement, inviting solidaristic relationships with things and ecologies, relationships built on durability and care (Korn, 2015).

Using recycled materials was not considered by pupils as a barrier to producing things of quality and value: 'We learned about recycling stuff, and we can still make nice stuff out of it.' Recycled materials were not construed by the pupils as 'second-class' matter but instead as a valued, reciprocal participant in the practice of creating, inviting solidarity both in terms of a *standing up for* and a *standing up as* nature (Jennings, 2015). As one pupil insisted, 'I think we need more recycled stuff in the world'. The pupils' appreciation of recycled materials and the practice of repair clearly gives voice to how 'attention to the labour of repair can extend solidarity politically and economically between human and non-human actors, creating and sustaining explicitly mutual and equitable forms of organisation, that direct themselves towards degrowth economies and ecologically diverse futures' (Graziano and Trogal, 2019, p. 221).

Another pupil expressed a clear account of how craft making can empower a broader ecological solidarity, *standing up for* (Jennings, 2015) nature: 'I enjoyed, like, making things and recycling at the same time. So it's like doing something for the planet but also doing something that you can use.' Pupils found the making experience more meaningful and enjoyable directly as a consequence of the material literacies and related solidarities provided through their appreciation of the nature and value of the recycled materials with which they were working: 'I like making the bracelets because we were learning about copper and how it was made.'

For Korn (2015), craft invites material literacies and intelligence, forms of understanding and working in dialogue with the physical properties of the materials of one's craft, deploying experiences and skills to modify, but also to work in harmony with, materials. Our pupils commonly reported the pleasure they derived from interacting with materials and tools through the journey of their quickly evolving competencies: 'I also liked doing the bracelets because I found it really fun to be able to twist and bend the copper.' Materials invite creative and playful responses in the context of craft: 'If you had copper or anything, also the beads, you can make a bracelet out of it to create stuff ... because you can bend it into many, many ways.' The reciprocity associated with solidaristic relationships (Meacham and Tava, 2021) is evident here in the interaction between pupil, craft making and the agency of the material (Korn, 2015; Preda, 1999). We also found that pupils cared greatly about the quality of their craft products, taking time to 'get things right', reflecting the autotelic ethic of craft, of doing things well for the intrinsic satisfaction of doing so.

Craft invites creative and materially sensitive ideas that can be harnessed in pursuit of ecological solidarities. The use of recycled materials is of particular value in this context: 'when we was making them, they were all recycled. And it helped me think about how to recycle more.' Another pupil was full of creative ideas for the use of recycled materials: 'I have been starting to use toilet paper rolls. And I'm

trying to make like a rocket ... Because there's lots of things you could do with loads of recycled things.' In contrast to virgin materials, typically offered with prescribed uses, recycled materials appeared to invite innovation for our pupils: 'if you have some material and you don't want it, like fabric or wool, you can reuse it again and make other stuff you didn't think of.'

It is through such reflexive opportunities that pupils may appreciate the inherent ecological and human value embodied within human-made things, and via which we might build relationships of care and solidarity. It is also through these literacy-based reflexivities that we might cultivate our capacity to find 'enchantment' in the world (Bennett, 2001); 'to be enchanted is to be struck and shaken by the extraordinary that lives amid the familiar and the everyday' (Bennett, 2001, p. 4). Capturing the link between enchantment and what we call solidarity, Bennett (2001) goes on to assert that 'to some small but irreducible extent, one must be enamored with existence and occasionally even enchanted in the face of it in order to be capable of donating some of one's scarce mortal resources to the service of others' (p. 4). It is our view that craft brings us closer to enchanting and solidaristic relations with things, and thence with others, and with ecologies.

Working with things catalyses enchantment, and therefore hope and efficacy, and in this way, craft may act as a bulwark against fear and helplessness in the face of crisis. As Bennett (2001) articulates, 'fear cannot dominate if enchantment is to be, for the latter requires active engagement with objects of sensuous experience; it is a state of interactive fascination' (p. 5). The eco-craftivist focus on doing, on working in dialogue with materials, facilitates experiences of self and self-efficacy. As one teacher reflected on the sock puppet activity, 'I think they really got the sewing with the buttons ... that practical activity. They can see what they physically can do.'

Emotional literacies: countering fear with joy and hope?

While a responsible eco-social pedagogy must validate the 'negative' emotions of anger, guilt and fear, we argue that conscientisation and solidarity depends on, and also reciprocally nurtures, hope (Montero, 2012). This hope is important in preventing disengagement and supporting transformative change, especially for children (Ojala, 2015). Research has previously identified that young people are navigating a whole host of emotional responses to climate change (Jones and Whitehouse, 2021), and this has the potential to impact on their behaviour, as well as their mental health and well-being. These emotional dimensions, and the value of craft making in supporting their expression, were reflected in our data.

The pupils' journey through our eco-craftivist pedagogy was marked by a partial shift away from what is commonly considered a more 'negative' to a more 'positive' emotional language. 'Negative' emotions are important and can be 'productive' in the context of the ecological emergency, and it is important not to negate such emotions (Jones and Davison, 2021). Many pupils shared their emotional concerns about the ecological crisis in advance of the workshops. One pupil shared, 'I'm worried ... there will be no more trees and there will be no more oxygen. And that means there will be no more people.' For another student, 'I'm worried, and angry – not enough is happening ... not many people are trying to help'.

But our pedagogy did leverage emotional change. One teacher reflected, 'as you went through the topic their feelings changed and they felt very strongly about protecting our wonderful world rather than destroying it'. Two things appeared to be happening. For those who remained angry and frustrated over the course of our intervention, our pedagogy nevertheless supported empowerment: 'before the workshop, I was feeling like I couldn't do anything about climate change because I always heard things like, "not only one person can change climate change", but then I realised that just you helping can actually make a difference. I think that made me think that it's possible to change.' Another teacher noted: 'so I'm saying that if they're still feeling those emotions, then perhaps they're also more likely to act upon it.'

For others, there was a more marked transition from despair to happiness and hopeful agency, and directly as an outcome of the solidarity-enhancing 'doings' associated with eco-craftivism. Pupils reflected that the workshops 'made people happier'. As one pupil stated, 'knowing what to do makes people feel happier, a bit more hopeful'. Creativity triggered an affective shift, as one pupil powerfully claimed: 'creativity ... just makes me happy ... craft most of the time makes people happy ... [and] ... being happy makes you more active.' Craft objects can act as mediums of therapeutic emotional expression (Keto and Foster, 2021). One pupil valued the sock puppet exercise 'because you could get

your mind off things and make something that, like you know, it's safe to talk about your feelings and worries and overcome those worries and fears'.

Positive affective experiences have significant cognitive and motivational impacts, particularly in collaborative learning settings (Li et al., 2020). Without exception, the pupils experienced the craft making as fun and enabling of learning as a result. As one pupil asserted, 'I also like to have fun whilst I'm also learning'. One part of the fun-like quality of craft making was its novelty vis-à-vis the strictures of the National Curriculum (DfE, 2013). While art and design are part of England's curriculum and has been encouraged by the school inspectorate's Ofsted since 2017 as one element of a broad and balanced curriculum, state schools continue to focus on maths and English, as these are tested (Ogier, 2022). According to one of the teachers, discussing the sock puppet workshop, 'they don't get many opportunities to do sewing, so actually having an opportunity that they really enjoyed was great – and doing something a bit different like creating a sock puppet'. Another teacher stressed the value added by the fun brought to the learning experience by making and how it would inform future practice: 'I think it was just nice, the fun element that they were ... learning and building on what they already knew ... But doing it in a different way ... its ... giving us some ideas about, "we'll do that sort of activity and they'll enjoy that".'

The same teacher stressed the value of making, within the classroom, as something that can bring interest over traditional transmission modes of learning: 'it's about making it engaging that the children are getting something out of it, not just, you know, the discussion but actually doing things ... it's difficult thinking about how to make it interesting and fun ... fun to learn.' Craft has been attributed with qualities of pleasure, even joy (Gauntlett, 2011), and learning by doing was juxtaposed, in a positive way, to conventional learning. As one pupil asserted, 'like if the whole session had been like just talking and science, sometimes it might have got a bit boring'. The fun that comes from doing, rather than 'just talking', seemed to mitigate more negative emotional responses to the theme of climate change.

Craft brings a dimension of play, and play is known to provide an invaluable medium for learning and action (Parker et al., 2022). As one teacher reflected, 'I don't think you're ever too old to learn through play'. Making sock puppets enabled the pupils to create a puppet character through which they could more safely articulate issues relating to the climate crisis, but in a manner that located 'fun' centrally. As one pupil reflected, 'it changes how you talk about climate change ... its like a more funner way to talk about climate change ... Adults use words that children don't know, so we can use these in our own words instead of ... using the words that adults only use.' Happiness and joy have a role in building solidarities with ecology, with others and with things, testifying to the importance of understanding the role of emotion in informing experiences of learning (Keto and Foster, 2021), as articulated by one pupil:

If you just learning about climate change, you're just saying like, 'Oh this is about the energy we are using', this might make people feel sad, but when we are being creative it makes people happier ... letting them know about what we can do about climate change but at the same time as having fun with that, and people will know what they have to do in the future. Well that's really exciting.

Here we can see how joy, through the making of useable artefacts and material intelligence, via the use of recycled materials, and framed within an ESP, can become connected to ecological solidarity. As one pupil reflected, 'I think it was fun doing something that included helping the environment but is also fun and challenging and creative'. One of the teachers reflected on the value of this doing-based syncretic learning: 'it was practical, but they were learning, but then they were enjoying it.' And one pupil agreed, 'when we were making it, it helped me to learn more about connecting things because we learned about where all the cotton came from and it reminded you that not everything gets recycled'.

While fun can be a catalyst for 'serious' learning, ensuring that this learning value is realised in practice necessitates that the learning experience is appropriately framed. According to one teacher, 'I think some of them [pupils] thought we were going to be a bit silly', whereas it should be 'no, let's think carefully about what you've written down ... I think a lot of them just thought it's a bit of fun'. The same teacher was unsure whether the pupils had made the desired links: 'I think they just enjoyed doing the fun bit of making the bracelet. I think it was like, we're doing some craft and artwork ... I'm not sure whether it enhanced [their understanding of the environmental issues involved].' We can see here the potential mismatch that might occur between pupils' and teachers' understandings of craft as an ESP.

Conclusions

In this article, we examined the role that eco-craftivism might play, as an ESP, for children aged eight to nine. We elaborated a case for a fuller de-bordering of solidarities within ESP through the incorporation of a solidarity with things, the latter being understood as a human commitment to literacy, valorisation and care in respect of things, in the interests of durable, reciprocal and sustainable relationships. We have begun to evidence the ways in which eco-craftivism empowered pupils' material and emotional literacies through the medium of making and in so doing enabled pupils to use their solidarity with things as a gateway to linking/developing ecological and intra-human solidarities.

We have made a number of contributions to research. Theoretically and conceptually, we have advanced the notion of de-bordering, or de-fragmenting (Salonen et al., 2023), within ESP in calling for an inclusion of a solidarity with things in addition to ecological and intra-human solidarities, arguing that orientations of literacy, care and commitment to things build durable and reciprocal relationships that catalyse sustainability. We have advanced our understanding of the potency that craft may have as a pedagogical tool for advancing sustainability-enhancing literacies and solidarities, with important cognitive, affective and behavioural components. Reflecting the meaning of craft as both noun and verb, and manifesting eco-craftivism's claims to function as a catalyst for transformative reflexivity, we found that pupils experienced emergent de-borderings of solidarity *both* through the process of making itself and through reflections on their experience during and after their making.

We have shown how thinking by doing, via the means of creative, making-orientated engagements with materials and objects, empowers hopeful and agentic responses to the ecological and justice emergency. Ardoin et al. (2018) point to a relative lack of research that focuses on primary education. We have contributed directly to the empirical, conceptual and theoretical components of this emergent body of research.

There are inevitably some limitations associated with the project that informs this article. Due to funding limitations, the empirical scope of the project was limited to two local primary schools, albeit covering a diverse demographic. While there was some limited longitudinalism to the project, in revisiting the schools to undertake three interventions over the course of a few weeks, a more extended time frame would unlock further understandings. These schools were also situated in the same city, in the south-west of England, and as such the project was place-specific, though the schools' locations were contrasting in their socio-economic and urban profiles. Specifically in terms of this article, we have needed to be highly selective in respect of the methods, data and issues presented here.

Nevertheless, our findings suggest important avenues for further research. These include an empirical upscaling to incorporate comparative understandings, exploring different sectoral and geographical contexts. It would also add value to examine different craftivist interventions, and over a longer time frame. In this project we worked with textiles, metal and cardboard to make a communication tool, gift and puzzle. Other craft projects might use different materials or might repurpose material for different types of use, for example, turning coffee grinds from a local café or the staff room into useful items such as coasters, or combining them with the ends of used wax candles to make new candles as a festive decoration, or upcycling lampshades by removing old fabric and creating a collage from old magazines for a local library or community centre. We also believe that interventions that transcend the boundaries between schools and communities and that invite more collective engagements would advance our understanding of ESP as a tool for enabling transformative change through collective action. Finally, we also see the value of further research exploring sustainability' competencies among pupils, the affective dimensions of eco-social pedagogy and the impact of social diversity on pupils' engagement with such learning approaches.

Declarations and conflicts of interest

Research ethics statement

The authors declare that research ethics approval for this article was provided by the University of the West of England ethics board.

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 blind the authors during peer review of this article have been made. The authors declare no further conflicts with this article.

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