A loss of 'cynefin' – losing our place, losing our home, losing our self

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ACADEMIC ABSTRACT

Overwhelming evidence suggests we are currently facing a climate crisis due to human impacts on essential planetary processes. At the same time, Wales is currently implementing significant curriculum reform. As part of the reform, the Welsh word, cynefin, appears in the Curriculum for Wales guidance. This paper analyses how an over-emphasis on limited epistemological and ontological viewpoints in education has helped to create an impoverished view of the self that has exacerbated our unhealthy relationship with nature. It is proposed that the word cynefin could be used conceptually to point towards alternative states of being and ways of knowing that involve an enhanced sense of self. It is suggested that children can engage with the natural world through heightened ontological perspectives whilst exploring ways of knowing that are normally marginalised in the mainstream classroom. This is much needed as creating opportunities for children to attune to their interrelated participation with the more-than-human world could nurture a replenished and restorative relationship with nature. Moreover, it could enable the experience of expanded existential understandings.

PRACTICAL ABSTRACT

This paper explores how the Welsh word cynefin could provide impetus for education in Wales to not only address the demands of the climate crisis, but enable a way of understanding human beings' sense of place and interrelatedness with the natural world. Wales is currently implementing significant curriculum reform. As part of the reform, the Welsh word, cynefin, appears in the Curriculum for Wales guidance. Cynefin is defined in the curriculum guidance as 'the historic, cultural, and social place which has shaped and continues to shape the community which inhabits it' (Welsh Government, 2021). However, the word cynefin can also be understood to describe one's feeling of a sense of homeliness in places in the natural world. Therefore, the word cynefin could be used by educators to emphasise the importance of valuing a sense of community in and with the natural world. This paper argues that these enhanced understandings are important as research shows that before we ask children to save the natural world, they need to experience a sense of connection with it. Moreover, this Welsh word, that cannot be easily translated into English, can give voice to a way of seeing and experiencing the world that is too often neglected in traditional schooling.

Keywords: Ontology, Epistemology, Nature, Education, Cynefin, Curriculum

Introduction

The Welsh word *cynefin* appears multiple times in the new curriculum for Wales guidance. Although lacking an exact English translation, cynefin can loosely be translated as meaning habitat (University of Wales Trinity Saint David, 2020). This paper will argue that if habitat is understood to include the more-than-human communities of a locality, then the word cynefin could be seen as a gateway into ways of seeing the world that counter the dominant anthropocentric worldviews. The words we use and how we interpret them matters as they help to create the narratives and dominant discourses of education. Freire (1996) argued that reading the word needs to include a reading and rewriting of the world. If we understand words as coming from specific contexts, and laden with the meaning of people's existential experiences, then this critical reading of the world can enable deeper understandings and the potential for societal change, rather than merely a reproduction of the dominant culture (Freire and Macedo, 1987). The reading or meaning of cynefin is important at this time, both because the new curriculum is about to become a statutory requirement in 2022, and also because we are facing a worsening climate crisis. This article highlights the increased potential for educators if understanding of cynefin could be expanded to include reference to our sense of community with the more-than-human world. For example, this could help encourage teachers to cultivate ways of knowing and states of being in their learners that could compel them to behaviours that will help to avert us from future environmental disaster.

It is suggested that the prevailing epistemologies and ontological viewpoints that can be found in schools, in Wales and beyond, only serve in exacerbating in our learners a sense of separation from the more-thanhuman world (Bonnett, 2020). In contrast, evidence suggests that engaging with the other-than-human world in alternative and attentive ways can produce ways of knowing and states of being that create a sense of communion with the more-than-human world (Adams and Beauchamp, 2019: 2020).

This paper analyses how anthropocentric perspectives in education have become established by discussing the arguments presented by Jardine (1992), Evernden (1999), Kincheloe (2008), and Bonnett (2020). A conceptual understanding of cynefin is then linked to underpinning theory that presents non-anthropocentric states of being, and ways of knowing, as an alternative to the dominant discourses in mainstream education. It is suggested that the word cynefin needs to be understood as including our shared habitat and sense of community with other-than-human life, so that our children may be encouraged to attend to their locality through less anthropocentric perspectives, listen to the voices of the more-thanhuman world, and in doing so, experience themselves existing in participation with the living landscape. The use of the word 'voices' here is significant as we wish to emphasise both the importance of listening, or paying heed, to the signs from the other-than-human world, and conceptualising these signs as multivocal utterances (voices) that need to be understood (Blenkinsop and Piersol, 2013). In addition, we take our lead from Abram (1996) in describing other-than-human life as 'more-thanhuman' in order to counter the view of other-than-human life as being less than human.

Context

We are currently living in the age of the Anthropocene, so-called because this is "the historical moment when the Human has become a geological force capable of affecting all life on this planet" (Braidotti, 2013, p. 5). If the climate crisis is not significantly addressed, then this failure will have catastrophic health implications globally for generations of people (Harmer et al., 2020; Karl, 2009). All indicators show that the problem is getting worse and that major changes are needed if a catastrophe is to be averted (Arneth et al., 2019; Watts et al., 2020). The United Nations Secretary-General (2021) declared we must take action to avoid the edge of the abyss. In response to such concerns, in 2015, the Welsh Government passed the Wellbeing of Future Generations (Wales) Act based on the United Nations' Sustainable Development Goals (Welsh Government, 2015) aiming to tackle the environmental crises being caused by climate change. This was followed up in 2019, when the Welsh Government (2019) made a climate emergency declaration.

The new Curriculum for Wales (Welsh Government, 2020a), beginning in 2022, provides an opportunity to raise awareness with younger generations. 'Climate change' was referenced in the 'Successful Futures' curriculum review (Donaldson, 2015), under the 'humanities' Area of Learning and Experience, as it advises links can be made to the humanities by exploring climate change and environmental issues through the subject areas of 'Science and Technology'. There is call to understand 'the context of the climate emergency' in the Science and Technology Area of Learning and Experience in the new Welsh curriculum guidance (Welsh Government, 2020d).

The Welsh Government also has supported wider initiatives that aim to support teaching about climate change. Keep Wales Tidy offer 'Eco-Schools Climate Change Training' to help teachers gain 'understanding of the science and engaging ways to communicate it' (Keep Wales Tidy, 2020). However, there are those who claim that before we ask children to save the planet, they must first feel a connection to the Earth. As Sobel (2008, p.18) explains, environmental ethics and behaviour will result from feeling at one with nature. Naess (1995), however, explains that this will only properly exist when one realises the 'ecology of the self'. This is a state of self-realisation where one understands one's connection and intrinsic identity with other-than-human life, rather than feeling that helping the more-than-human world is an altruistic act (Naess, 1995).

Furthermore, it is argued that the current pedagogical dominance of an occidental scientific worldview has been at least partly responsible for the climate crisis that we now face (Bonnett, 2020; Evernden, 1999; Jardine, 1992). Bonnett (2020) analyses how 'the operation in the West of a deep set of motives' inculcates us 'into a particular version of reality' (Bonnett, 2020, p. 10). Bonnett explains that this view has been driven by 'scientism', that is 'the phenomenon of presuming that classical experimental science has a privileged access to the nature of reality' (Bonnett, 2020, p. 15). This involves the belief that the methods, findings, and constructions of Western science 'reveal what is 'really' real and that therefore it can assume the mantle of arbiter for thinking in general' (Bonnett, 2020, p. 15).

Limitations of the Cartesian-Kantian scientific paradigm

The roots of this adherence to a limited worldview, or what Bonnett (2017) calls 'scientism', lie deep in the philosophy of René Descartes, the seventeenth century French philosopher and mathematician. Evernden (1999) explains how Descartes attempted to 'discover how to attain certain knowledge' (p. 52). Descartes devised his theory of 'methodic doubt' when thinking about reality and what can be known to be true. He concluded that 'there was one thing on which he could be certain: the fact that he was doubting' (Evernden, 1999, p. 52). This is summed up in the famous 'cogito ergo sum', which means 'I think, therefore I am'. Consequently, Descartes declared that systematic or methodic doubt was the means to certain knowledge. There are various problematic assumptions that come from Descartes' philosophy. First, it is assumed that knowledge can only be certain if it can be rationally explained (Jardine, 2007). This results in what Kincheloe (2008) calls an 'epistemological naivete', which underestimates the complexities of knowledge production and evaluation. In addition, rational logics are privileged and other ways of knowing become marginalised.

Furthermore, there is a simplistic reduction of what is perceived into basic parts, and these in turn are viewed as objects (Evernden, 1999). This means the object of our inquiry is severed from ourselves and related meanings and narratives (Jardine, 2006). Therefore, a Cartesian dualism is created, so that the continuum of being consists of two categories, "us and it" (Evernden, 1999, p. 75). The result is that reality is objectivised and the natural world is viewed as passive and inert in order to be classified and dominated (Kincheloe, 2008).

Jardine (1992) further analyses how Descartes' philosophy, combined with Kant's concept of 'Pure Reason', means humanity's importance is 'bloated' when we try and give meaning and integrity to the earth. Kant's philosophy represents a 'Copernican Revolution' (Jardine, 1992, p. 30) as it 're-claimed at the epistemological level what was lost in the cosmological level in the work of Copernicus', who devised an astronomical model proposing that the sun was the centre of the universe and the Earth rotated around it. Jardine (1992) asserts that this had removed humanity from a perceived special place in the cosmology, but Kant put human reason back at the centre of the 'knowable universe' (p. 30). In other words, it was declared that the logic of human reason is God-given and at the pinnacle of truth. It was deemed that experiential and empirical knowledge can only be truly understood through human reason. For things to 'make sense' they must be able to be explained through, and conform to, rational explanation. Consequently, our embodied earthly connections are denied. Jardine (1992) suggests that the philosophies of Kant and Descartes 'may be logically and epistemologically coherent', but in denying our interdependencies with the other-than-human world, 'contain that bewildering, low-level disease that we have come to understand as modern life' (1992, p. 28).

Kincheloe (2008) similarly warns that in entering a dangerous ecological era, 'we have also entered a precarious epistemological epoch - and the two domains are not unrelated' (p. 48). By adhering to this epistemology, that objectifies the other-than-human world, we ignore our interrelatedness (Evernden, 1999). In addition, this epistemological viewpoint leads to a limited axiology, whereby we end up valuing the natural world as a resource. Evernden (1999, p. 54) calls this 'resourcism', where we try to make natural properties comply with our beliefs and subject to scientific explanation.

Jardine (1992) states that this perspective has ecological, pedagogical, and ontological significance and we need to 'reconsider what we understand ourselves to be and what, therefore, we wish our children to become' (p. 28). Kincheloe concurs, arguing that constructing and understanding 'new epistemologies may be central to human survival' (Kincheloe, 2008, p. 227). Jardine (1992) suggests that this starts by engaging with the otherthan-human world, not only through Western scientific values of judgment, but as an attentive listener, with care as part of a 'living, vital relationship in which each of us needs the other to be what we are' (p. 42). This calls for a critical complex epistemology (Kincheloe, 2008) that draws on marginalised ways of knowing, including indigenous epistemologies, and ways of knowing that entail alternative cultures and ontologies. Kincheloe (2008) declares that we need to undermine modern forms of colonialism, to devise a new connectedness using unprecedented ways of viewing the world, leading to new realities. It is only then that we will be able to see the more-than-human world not as inert, but as an alternate voice where the Earth 'is not an object but a home' (Jardine, 1992, p. 42).

Metaphysics of Mastery

Bonnett conceptualises the view of seeing the natural world as a resource to be utilised as being due to 'the metaphysics of mastery' (2020, p. 9). This is a desire to make everything in nature subordinate to the will of humans. Bonnett (2020) emphasises that rationality easily welds to the desire of mastery as it has been used to exploit and control the natural world. Bonnett continues to assert that this is significant because scientism and the metaphysics of mastery are not only at the root cause of the current environmental crisis, but they also prevent 'human flourishing' (Bonnett, 2019, p. 252). In other words, they alienate us both from nature, and in doing so from our own inherent nature.

Bonnett (2019) also warns that the combination of the metaphysics of mastery and scientism have become so pervasive that they have presented a distorted view of the world and that this includes a resulting malignant philosophy of education. Under this philosophical glare things cannot just be themselves, but need to be ordered to serve our will (Bonnett, 2019). The key to breaking the stranglehold that scientism and the metaphysics of mastery have over education in the West is to allow experiences of different ontological understandings (Bonnett, 2020; Jardine, 2000) - in short, to experience different realities or ways of being in the world. Bonnett (2019) concludes that when the mystery, spontaneity, and fluidity in the world are recognised then the metaphysics of mastery is defeated, opening a new relationship with nature.

Place-based understanding

It is argued that understanding and experiencing a sense of 'place' allows us to feel this crucial sense of spontaneity and wonder, whilst also

encompassing ways of knowing and states of being that challenge the dominant discourses to which schools currently adhere. Jardine (2017, p. 143) suggests that we need to things 'located in a patterned nest of interdependencies', or, to understand the whole we need to pay attention to its wholeness. This ontological viewpoint entails recognising the subjectivity of 'beings' in the 'more-than-human' world, rather than viewing nature as objects. Bonnett (2020) demonstrates this by asking us to imagine entering a woodland and to become aware of the interdependencies of the things in the wood. This is not as a cerebral exercise, where one can analyse and categorise their chemical or biological connections. Instead, it involves recognising that they are dependent not just for physical survival but also 'in their being' (Bonnett, 2020, p.22). We can relate this understanding of 'their being' to our becoming aware of someone who is standing before us. Just as we say that we can feel the presence of another human being, when we see a tree standing before us, we should feel the tree's living presence. In this way the tree is 'imbued with the occurring of all that is around it' (Bonnett, 2020, p. 23), as it interdependently shares a particular place. It sustains the place and is sustained by it, and therefore participates in what Bonnet (2020, p. 23) calls 'a place-making'.

The importance of place is central to both indigenous ways of knowing and indigenous education Cajete (2015), however, notes that homogenising indigenous cultures is problematic. However, he states that it is possible to trace common strands that run through their beliefs. Indigenous peoples view all people as being part of a community with the natural world where they live, believing 'we are of this land and this land is us' (Cajete, 2015, p. 50). This view involves a 'centering relationship with place' and a fundamental belief that education is about 'learning to be in a place in a good way' (Cajete, 2015, p. 51). In this context, we can learn how to become aware of our ongoing participation with nature, experience existential understandings about ourselves, and learn how to behave accordingly. In this sense, nature becomes both a teacher and a relation. Smith (2014) similarly declares that indigenous peoples consider '[p]lace, not simply as political possession of land, but as the necessary condition for sacred understanding' (p. 54). This worldview entails 'a sense of place on the earth, by a feeling of being at home, and by practices of fitting in with the local landscape and biocommunity' (Narvaez et. al, 2019, p. 6). In indigenous cultures, children are taught that places in the natural world are sacred and to be revered. Thus, honouring the interconnectedness of human beings with all their relations in the more-than-human world, and the spiritual embeddedness of life in all other life (Ross, 2014).

Orr (2013) argues that the idea of place has been neglected in mainstream education in the West. He outlines three main reasons. The first of these is the immediate becoming mundane, where it beomes harder to see things which are closest to us. Secondly, we are largely a deplaced people as the paces around us do not provide us with thigs such as food, water, materials recreation or sacred inspiration. Thirdly, places are specific and need to be experienced, yet our thinking has become increasingly abstract. This detachment results in words and theories often taking on a life of their own, apart from the reality they are supposed to mirror, 'often with tragic results' (Orr, 2013, p. 184). Here we can hear echoes of Jardine's (2006) warnings about the elevation of rational logic. Orr (2013, p. 184) concludes that 'for the fully abstracted mind, all places become "real estate" or mere natural resources, their larger economic, ecological, social, political, and spiritual possibilities lost to the purely and narrowly utilitarian'.

Cynefin

The questions around 'place', its potential for impacting on the climate crisis, and its significance in the new curriculum for Wales, perhaps find their nexus in the Welsh word, 'cynefin'. The word 'cynefin' does not have a simple literal translation into English, but is translated as 'habitat' or 'haunt' (University of Wales Trinity Saint David, 2020). An in-depth analysis of the etymology or definition of cynefin is beyond the scope of this paper, and not necessary for our exploration. However, what is useful for our analysis is a focus on how the word is presented in the Welsh Government curriculum guidance. It appears in the 'Cross cutting Themes for Designing Your Curriculum' section (Welsh Government, 2020b) and also under the Humanities Area of Learning and Experience (Welsh Government, 2020c) section. It is also given this explanatory definition:

The place where we feel we belong, where the people and landscape around us are familiar, and the sights and sounds are reassuringly recognisable. Though often translated as habitat, cynefin is not just a place in a physical geographical sense; it is the historical, cultural and social place which has shaped and continues to shape the community which inhabits it. (Welsh Government, 2020c)

Interestingly, we can see here the word 'landscape' as a potential nod towards more-than-human life. In addition, cynefin is articulated as being 'the place where we feel we belong' (Welsh Government, 2020c). These ideas have the possibility to resonate with ancient ways of knowing attributed to indigenous peoples. Maker (2018) explains that 'indigenous people experience a unified, but layered landscape that is both their homeland and a sentient entity of metaphysical and physical proportions and presences' (p. 454). Therefore, people's interrelatedness with the more-than-human world tunes and shapes understanding of a landscape 'that is also conscious of human beings' (Marker, 2018, p. 454). However, the understanding of landscape and cynefin, as presented in the Welsh curriculum guidance, appear to have an anthropocentric focus, emphasising the histories of cultures and people (Welsh Government, 2020c). This focus is repeated in the following explanation given in the same section:

Learners should be grounded in an understanding of the identities, landscapes and histories that come together to form their cynefin. This will not only allow them to develop a strong sense of their own identity and well-being, but to develop an understanding of others' identities and make connections with people, places and histories elsewhere in Wales and across the world. (Welsh Government, 2020c)

Nonetheless, this explanation suggests that understanding a person's cynefin can involve 'a strong sense of their own identity and well-being' in order to 'develop an understanding of others' identities' (Welsh Government, 2020c). If we take 'others' here to include other-than-human life, then this could encourage consideration of how people relate to the more-thanhuman world. Every day we live in interdependence and communicate with the others of the more-than-human world (Blenkinsop and Piersol, 2013). Our senses keep us in constant dialogue with the natural world even if we participate subconsciously. The agencies of the more-than-human world can be felt, smelt, tasted, heard, sensed. Our circadian rhythm, or body-clock, is linked to the rising and setting of the sun. We need the oxygen provided by plants to survive and plants benefit from the carbon dioxide we breathe into the air. Abram (1996) highlights that if we 'return to our senses', then we realise that our sensory perceptions are 'part of a vast, interpenetrating webwork of perceptions and sensations borne by countless other bodies' (p. 65). We are not simply encased in skin, but rather our skin is porous and we are tuned for engagement with the morethan-human world (Abram, 1996). We receive 'the nourishment of otherness' (Abram, 1996, p. ix) through the skin, the tongue, the eyes,

ears, and nostrils. Only when we attend to, and sense, our interaction with the more-than-human world do we perceive this otherness. Yet, we are permanently in participation with the world through our breath, 'a continual oscillation between exhaling and inhaling, offering ourselves to the world at one moment and drawing the world into ourselves at the next' (Abram, 2010, p. 61). Ingold (2021) declares there are two halves to our bodies. The half we can see is made of flesh and bones, covered in skin, whereas the other half 'normally invisible to us, is made of air' (p. 34). We believe we are creatures made entirely of flesh, separate from the natural world. Yet we share the living body of the air with the natural world. Our objectivistic mindset 'has made us deaf to the fact that trees, rivers and even rocks could actually be more significant partners in dialogue' (Blenkinsop and Piersol, 2013, pp. 42–3).

Blenkinsop et al. (2017) criticise our colonial attitudes and actions towards other-than-human life, calling on educators to attend to the multivocal utterances of the more-than-human world. They provocatively sum this up with the rallying cry, 'shut-up and listen!' (Blenkinsop et al., 2017). It is argued that educators can have a critical role in avoiding the 'voicelessness of the living earth' (Blenkinsop et al., 2017, p. 364). Schools, and the dominant culture in society, perpetuate the colonial worldview as 'colonizers are taught to not-know that they are deeply interwoven in a fabric of interspecies kinship' (Blenkinsop et al., 2017, p. 364). Blenkinsop et al. (2017) also highlight that pupils learn that people have individual names, and as they grow older, may be able to distinguish between different take-way lattes, but cannot name different trees. The same may be said for not knowing different birds and birdsong, the different scents of flowering plants, or the different appearances of the moon. Even if they have this type of knowledge, we must be wary of merely categorising and labelling in order to 'know' other-than-human life, thus falling back into an objectivistic and anthropocentric mindset. In her book, 'Imperial Eyes', Pratt (1992) calls this a 'rationalizing, extractive, dissociative understanding' which conditions only 'functional, experiential relations among people, plants and animal' (Pratt, 1992, p. 38). To counter this, Blenkinsop et al. (2017), state that we must recognise and resist by cultivating discourses 'that no longer ignore or implicitly sanction marginalization and violence, but recognize the complexity, uniqueness, and agencies within any local ecosystem (p. 363). Therefore, our understanding of our cynefin can embrace this challenge by acknowledging the need to know and listen to the agencies, or 'voices', of the more-than-human world, our living habitat.

Through recognition and resistance, we can alter the ways of knowing and states of being that continue to remain unchallenged in our educational

When given the opportunity, children can tune in to the voices of the more-than-human world and participate in a multivocal dialogue that gives heightened existential understandings through alternative states of being (Adams and Beauchamp, 2019). These understandings recognise the agency of the more than-human world and facilitate augmented ontological experiences where the children celebrate in a joyful participation with the more-than-human world as equals (Adams and Beauchamp, 2019). This is far removed from the subject-object ontology usually promoted in the classroom and beyond. By being encouraged to explore alternative ways of knowing and contemplative states of being with nature, in comparison to the normal discourse of reflective rationality, children can experience and develop biophilic, spiritual understandings of oneness with their natural environment (Adams and Beauchamp, 2020). If the meaning of the word cynefin, our habitat, or haunt, is understood to include our deep connection with the more-than-human world, then this could encourage the exploration of expanded existential understandings.

This thinking is not an attempt at philosophical navel-gazing, but strikes at the heart of the conceptual understanding that is needed to avert us from ecological disaster. If the concept of cynefin in the new curriculum for Wales is to enable ecological healing, then we must be careful it does not merely become another way of colonising the land and perpetuating the desire to dominate, use, and control. We must ask how the idea of cynefin can allow for other ways of knowing and other ways of being to be explored in schools. If we are to avoid the potential for resourcism (Evernden, 1999), caused by an over-emphasis on rational logics (Jardine, 1992), and if the new curriculum for Wales is not to be limited by 'scientism' and led by 'the metaphysics of mastery' (Bonnett, 2020), then we must find ways of breaking the spell of anthropocentric perspectives. This is not a demand to 'do away' with classical experimental scientific thinking or mathematical logic, but it is an acknowledgement that we have allowed these ways of knowing to 'become unquestioningly paradigmatic and equally unquestioningly self-regulating in our understanding of ourselves and our world' (Jardine, 2000, p. 98). Perhaps if cynefin can be seen as a conceptual gateway to thinking about "the landscape" as a living, breathing, changing world, a world we participate in, are dependent on and a part of, perhaps then it can be seen to inspire and validate ways of knowing and states of being that go beyond the pervasive epistemologies and ontologies that hold sway in our schools. Perhaps then we can actively realise and experience an understanding of place, our sense of cynefin, that recognises the Earth is not a thing, but a home, and a fundamental part of who we are.

The future?

The word cynefin could be used conceptually, by educators in Wales, in order to demonstrate a less anthropocentric view of the world in contrast to the current dominant anthropocentric discourses. These dominant discourses have produced limited ontological and epistemological stances that only serve to exacerbate the climate crisis and our unhealthy relationship with nature. In demanding certainties and easily measurable futures, our curricula have helped to prise us away from kinship with the natural world. However, other marginalised ontological and epistemological viewpoints could help to return us to a more balanced and restorative relationship with the more-than-human world. Educators need to feel emboldened to create opportunities for their learners where alternative states of being, and ways of knowing, are encouraged. Thus, allowing for 'an expanded sense of self' (Blenkinsop and Piersol, 2013, p. 57) not merely encased in skin, but living in dialogue and participation with the morethan-human world. This is not just about our future relationship with the Earth, but our future understanding of ourselves.

References

- Abram, D. (2010). Becoming Animal: An Earthly Cosmology. New York: Vintage Books.
- Abram, D. (1996). The Spell of the Sensuous: Language and Meaning In a More-Than-Human World.
- Adams, D., and Beauchamp, G. (2020). A study of the experiences of children aged 7–11 taking part in mindful approaches in local nature reserves. *Journal of Adventure Education and Outdoor Learning*, 1–10.
- Adams, D., and Beauchamp, G. (2019). Spiritual moments making music in nature. A study exploring the experiences of children making music outdoors, surrounded by nature. *International Journal of Children's Spirituality*, 24/3, 260–75.
- Adams, W. M., and Mulligan, M. (eds). (2003). Decolonizing nature: strategies for conservation in a post-colonial era. Earthscan.

- Arneth, A., Barbosa, H., Benton, T., Calvin, K., Calvo, E., Connors, S., ... and Zommers, Z. (2019). IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. Summary for Policy Makers. Geneva: Intergovernmental Panel on Climate Change (IPCC).
- Bateson, G. (2000). Steps to an ecology of mind: Collected essays in anthropology, psychiatry, evolution, and epistemology. University of Chicago Press.
- Blenkinsop, S., Affifi, R., Piersol, L., and Sitka-Sage, M. D. D. (2017). Shut-up and listen: Implications and possibilities of Albert Memmi's characteristics of colonization upon the 'natural world'. *Studies in Philosophy and Education*, 36/3, 349–65.
- Blenkinsop, S., and Piersol, L. (2013). Listening to the literal: Orientations towards how nature communicates. *Phenomenology & Practice*, 7/2, 41–60.
- Bonnett, M. (2020). Environmental Consciousness, Nature and the Philosophy of Education: Ecologizing Education. London: Routledge.
- Bonnett, M. (2019). Towards an ecologization of education. The journal of environmental education, 50/4–6, 251–8.
- Braidotti, R. (2013). The posthuman. Cambridge, UK: Polity Press.
- Cajete, G. (2015). Indigenous community: Rekindling the teachings of the seventh fire. Minnesota: Living Justice Press.
- Evernden, L. L. N. (1999). The natural alien: Humankind and environment. University of Toronto Press.
- Freire, P. (1996). Pedagogy of the oppressed (revised). New York: Continuum.
- Freire, P. and Macedo, D. (1987). Literacy: Reading the Word and the World. South Hadley, MA: Bergin & Garvey.
- Harmer, A., Eder, B., Gepp, S., Leetz, A., and van de Pas, R. (2020). WHO should declare climate change a public health emergency. *Bmj*, 368.
- Jardine, D. W. (2017). Back to the basics of teaching and learning: Thinking the world together. London: Routledge.
- Jardine, D. W., Friesen, S., and Clifford, P. A. (2006). Curriculum in abundance. Psychology Press.
- Jardine, D. (2000). Under the tough old stars: Ecopedagogical essays. Brandon, VT.
- Jardine, D. W. (1992). Immanuel Kant, Jean Piaget and the rage for order: Ecological hints of the colonial spirit in pedagogy. Educational Philosophy and Theory, 24/1, 28-43.
- Karl, T. R., Melillo, J. M., Peterson, T. C., and Hassol, S. J. (eds). (2009). Global climate change impacts in the United States. Cambridge University Press.
- Keep Wales Tidy (2020) Eco-Schools Climate Change Training. Available at https://www.keepwalestidy.cymru/event/eco-schools-climate-change-training (accessed 26 April 2021).
- Kincheloe, J. L. (2008). Knowledge and critical pedagogy: An introduction (Vol. 1). New York: Springer.

- Naess, A. (1995). Self-realization. An ecological approach to being in the world. Naess, A., and Sessions, G. (1995). Deep ecology for the twenty-first century. Boston: Shambhala.
- Narvaez, D., Arrows, F., Halton, E., Collier, B., and Enderle, G. (2019). People and planet in need of sustainable wisdom. In Narvaez, D., Arrows, F., Halton, E., Collier, B., and Enderle, G. (2019). *Indigenous sustainable wisdom: First-nation know-how for global flourishing*.
- Narvaez, D., Arrows, F., Halton, E., Collier, B., and Enderle, G. (2019). *Indigenous sustainable wisdom: First-nation know-how for global flourishing*. Peter Lang: New York.
- Orr, D. (2013). Place and Pedagogy. NAMTA Journal, 38/1, 183-8.
- Ross, R. (2014). Indigenous healing: Exploring traditional paths. Toronto: Penguin Canada.
- Sinclair, N. (2004) 'Preface', in K. Williams (ed.), The Land and the Sea (Llandysul, Wales: Gomer Press).
- Smith, D. (2014). *Teaching as the practice of wisdom* (Vol. 5). New York: Bloomsbury. Sobel, D. (2008). *Childhood and nature: Design principles for educators*. New Hampshire: Stenhouse Publishers.
- United Nations (2021). World on the verge of climate 'abyss', as temperature rise continues: UN chief. 19 April 2021. Available at https://news.un.org/en/story/2021/04/1090072 (accessed 26 April 2021).
- University of Wales Trinity Saint David (2020). Welsh-English / English-Welsh On-line Dictionary. University of Wales. Available at: https://geiriadur.uwtsd.ac.uk/index.php?page=ateb&term=cynefin&direction=we&type=all&whichpart=exact&search=#ateb_top (accessed 14 April 2021).
- Watts, N., Amann, M., Arnell, N., Ayeb-Karlsson, S., Beagley, J., Belesova, K., ... and Costello, A. (2020). The 2020 report of The Lancet Countdown on health and climate change: responding to converging crises. *The Lancet*.
- Welsh Government (2015). Well-being of Future Generations (Wales) Act 2015, Cardiff: Welsh Government.
- Welsh Government (2019). Press release. Welsh Government makes climate emergency declaration. Available at https://gov.wales/welsh-government-makes-climate-emergency-declaration (accessed 26 April 2021).
- Welsh Government (2020a). Curriculum for Wales. The journey to 2022. Available at https://hwb.gov.wales/api/storage/cbe5e2c9-16cf-4eb7-87a1-c1a64fc598d8/the-journey-to-2022.pdf (accessed 26 April 2021).
- Welsh Government (2020b). Cross-cutting themes for designing your curriculum. Available at https://hwb.gov.wales/curriculum-for-wales/designing-your-curriculum/cross-cutting-themes-for-designing-your-curriculum (accessed 26 April 2021).
- Welsh Government (2020c). Humanities Area of Learning and Experience. Availableathttps://hwb.gov.wales/curriculum-for-wales/humanities/designing-your-curriculum/ (accessed 26 April 2021).

Welsh Government (2020d). Science and Technology Area of Learning and Experience. Available at https://hwb.gov.wales/curriculum-for-wales/scienceand-technology/designing-your-curriculum/ (accessed 15 October 2021).