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EDUCATION FOR PLANETARY WELL-BEING

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Education is the key to transforming practices¹

The ongoing global crises are the motivation for the concept of planetary well-being (Kortetmäki *et al.*, 2021). These crises can be regarded as being nested in one another (Heikkinen *et al.*, 2023; Kaukko *et al.*, 2021). The most discussed of these nested crises are the climate emergency and the global loss of biodiversity, but the global tangle of crises also includes social and economic crises, like the social justice gap between the global North and the global South, and health crises, like global pandemics (*e.g.*, Johnson *et al.*, 2020; Kaukko *et al.*, 2021). To be able to solve these nested crises, humans must learn to act in a new way; in other words, humanity needs to make a rapid shift from unsustainable practices to sustainable ones. The term *green transition* has increasingly been used to describe this shift (*e.g.*, Bianchi, 2020), the urgency of which has been recognized worldwide.

Learning and education play a key role in the green transition. However, in order to change prevailing practices, learning and education need to be understood in a new way. Traditionally, education has socialized new generations to conventional practices and ways of thinking. Given the present circumstances, reproducing prevailing practices and habitual belief systems is no longer defensible; rather, education should promote new kinds of practices and new ways of thinking. Education should, in other words, promote *transformative learning* that aims for something unprecedented (Mezirow, 1994; O'Sullivan, Morrell and O'Connor, 2002; Wals, 2011). Transformative learning means bringing about such a fundamental change that it transforms a person's psyche, forming a new kind of identity; it is a shift of consciousness that dramatically and permanently alters the human way of being in the world. Such a profound transformation involves experiencing a deep, structural shift in the basic premises of thought, feeling, and action.

To enable such a transformation, we must first critically examine the prevailing practices and reflect on their underlying beliefs. One fundamental belief system that makes us reproduce previous practices in a path-dependent manner is our human-centred worldview, in other words our anthropocentrism. The concept of *education for planetary well-being* advocates a more-than-human view, or rather a planetary view, as the basis for education—one which manifests as a dialogic relationship between humans and the rest of nature. The current paradigm of socialization—that is, societal continuity and reliability based on educating new generations with required knowledge and skills (Värri, 2018)—appears to be inadequate to securing planetary well-being. For example, according to Ruuska (2017), higher education reproduces the current drastically unequal economic systems, which exacerbates the ecological crises. This notwithstanding, in recent decades, numerous initiatives and frameworks have been introduced in order to address this problem. These initiatives, which we refer to as current frameworks, have been helpful but have not been sufficient to effect fundamental change. Nonetheless, in our view, some of these ideas are germane to the concept of *education for planetary well-being* and therefore germane to our present purposes.

The key question is how to put into practice a form of education that promotes the necessary transformative learning and renewal of practices and that maintains a planetary state in which “organisms (including humans) can realize their typical characteristics and capacities” (Kortetmäki *et al.*, 2021, p. 4). To answer this question, we suggest the concept of *education for planetary well-being* as a framework that could bring together important existing educational themes and ideas with a new, more focused stance. *Education for planetary well-being* refers to the processes of upbringing, teaching, and learning that enable individuals and communities to promote the well-being of the planet and its inhabitants, which we refer to as life on Earth (consisting of nonhuman and human life in the biosphere and its ecosystems as well as the geophysical Earth systems). *Education for planetary well-being* promotes transformative learning and empowers individuals and societies to make responsible choices in terms of life on Earth. It focuses on learning about the interconnectedness of all life on Earth and the importance of preserving the liveable planet into the future, emphasizing the need to advance toward this goal.

The undercurrents of education for planetary well-being

Humanism, instrumental rationality, and dualism

A considerable number of the problems of our time (in education systems built on “Western” beliefs) stem from anthropocentric thinking, which attributes the greatest value to that which is good for humans. In other words, the actions and activities that yield benefits for humans are seen as worth pursuing foremost. This worldview does not necessarily take into consideration what is good for the rest of nature.

Quite the contrary: Very often humans have acted in a way that undermines the well-being of the rest of nature.

The origin of these problems can be traced back to the birth of the Enlightenment and humanism. A decisive change in thinking was the shift towards Cartesian dualism in the sixteenth century, based on the philosopher René Descartes' concept that the human mind is separate from the world outside of it; that is, humans are conscious "subject" and the rest of the world is regarded as an "object" of human thought and action. The transition to Cartesian dualism was also on the background of the Enlightenment project. Originally a European philosophical movement that began at the end of the seventeenth century, the influence of the Enlightenment has continued into modern times, especially with regard to its emphasis on rationality and knowledge (Horkheimer and Adorno, 1972). In humanism, what is good for humans is thought to have the highest absolute value. A phrase by Protagoras of Ancient Greece was quoted as the motto of humanism: *Homo mensura*—the human being is the measure of everything (Hietalahti, 2022; Niiniluoto, 2015).

The Enlightenment and humanism thus share the assumption that all life on Earth exists *for* humans. One of their guiding principles was that humans should free themselves from the power of the natural forces. The greatest achievement of the Enlightenment era was thought to be that the human species had managed to subjugate nature and other lifeforms on Earth to its own use with the help of human reason. In other words, everything on Earth was deemed to be of instrumental value for the benefit of humans specifically: Since the Enlightenment, the value of nature has been measured from the perspective of how it increases human well-being and wealth. The Age of Enlightenment has thus been seen as the triumph of *instrumental rationality*. Education has further reproduced and developed the idea that humans should use their reason to subdue natural resources for their own advantage (Horkheimer and Adorno, 1972).

Posthumanist thinking has emerged as a counter-movement to this tradition (Hietalahti, 2022). Posthumanism assumes that the continuation of life on this planet is of higher value than the life of one particular species, *Homo sapiens*. Posthumanism has developed from various philosophical origins and has expanded in many directions, and it is not a unified school of thought. It is rather an umbrella term that challenges anthropocentric ways of thinking and redefines the idea of what it means to be human and how humans (should) relate to their material and mediated environment (Ennsner-Kananen and Saarinen, 2022).

The concept of planetary well-being is based on a similar criticism of human-centred thinking typical of posthumanism. In the definition of planetary well-being, the highest value, according to our interpretation, is not attributed to human well-being exclusively but rather to achieving a planetary state in which organisms, including humans, can realize their typical characteristics and capacities. Therefore, the concept of planetary well-being can be considered a natural continuation of the discussion that has taken place within posthumanist theorization in terms of its critique of Cartesian dualism, instrumental rationality, and anthropocentric humanism.

Consequently, *education for planetary well-being* is also based on this thinking. It is not our intention to claim that *education for planetary well-being* is the only educational approach that is based on non-anthropocentrism and the critique of instrumental rationality, as there are also other approaches in the field of education that share these assumptions to varying degrees. These current frameworks are introduced in the upcoming section to present the earlier and current stages and concepts in the field of education that have paved the way for developing the concept of *education for planetary well-being* introduced in this chapter.

The historical background of the current frameworks

There are a number of approaches in the field of education whose common denominators are sustainability, protection of nature, and consideration of the natural environment. We call these approaches current frameworks. They consist of different initiatives, literature, and terms related to environmental and social responsibility as well as intergenerational justice in the context of education. Such current frameworks are presented here firstly as a historical continuum. These current frameworks offer a kind of mirror against which we outline the idea of *education for planetary well-being*.

According to Bianchi (2020), the historical development of initiatives and literature of the field has undergone three phases. Originating in the 1960s, the first phase is characterized by the impact of Rachel Carson's book *Silent Spring* (1962) and others whose work preceded the environmental movements and the tradition of environmental education. The environmental education tradition embraced ecological arguments without conceits and eschewed anthropocentrism (Robottom, 1992). While these developments were the foundation for the first international UN conference on environmental issues, organized in Stockholm in 1972, these principles did not influence the framework and key term that was to dominate environmental policy in the coming decades: Sustainable development. According to *Our Common Future* (World Commission on Environment and Development (WCED), 1987, p. 16): "Humanity has the ability to make development sustainable to ensure that it meets the needs of the present generation without compromising the ability of future generations to meet their own needs". Although the legacy of sustainable development and its emphasis on intergenerational justice has had significant influence in the world, ultimately it was founded on anthropocentric humanism and can be seen as directly continuing the Enlightenment project, albeit in a slightly toned-down form.

The second phase was framed around the UN Rio conference in 1992 and the adoption of Agenda 21, a non-binding sustainable development action plan that pushed educational policies towards skills and values linked to social, developmental, and environmental justice. This is the explicit educational foundation for the sustainable development tradition, currently present in the United Nations Educational, Scientific and Cultural Organization (UNESCO) framework (Laurie

et al., 2016). According to UNESCO (2017), learning about sustainability must prepare students and learners of all ages to find solutions for the challenges of today and the future. Education should be transformative and should allow citizens to make informed decisions and take individual as well as collective action to change our societies and care for the planet.

The third phase is the era after the World Summit for Sustainable Development that took place in Johannesburg in 2002. This event served as the impetus for the Decade of Education for Sustainable Development (2005–2014), which emphasized lifelong learning and spurred initiatives worldwide. That project was followed by the UN Global Action Programme (2015–2019), which aimed to intensify the initiatives of Education for Sustainable Development and set Sustainable Development Goals (SDGs), a framework adopted by the UN in 2015 which, in addition to providing general guidance for sustainable change, places an explicit focus on the quality of and conditions for education (SDG 4) (Bianchi, 2020, p. 11). Currently, the UN Global Action Programme is being followed up by UNESCO's Education for Sustainable Development as part of its 2030 programme, which aims to bring about the personal and societal transformation that is needed to achieve sustainable development worldwide (Bianchi, 2020; UNESCO, 2022).

Sustainable development and sustainability are ubiquitously present in educational policy discourse, but it is not always clear what these terms mean. Bianchi (2020, p. 10) sums up the recent policy focus on sustainable development and sustainability as follows:

Sustainability and sustainable development are often used interchangeably, despite their conceptual difference. In reference to the UNESCO definitions, sustainability is best described as a long-term goal, such as attaining a more sustainable world; while sustainable development, like the term suggests, refers to the many processes and pathways to achieve development.

The “take-home message” of Bianchi is that it makes a difference whether we discuss sustainability or sustainable development, and that this choice has consequences for education. As indicated by Matero and Arffman (see Chapter 7), the concept of sustainable development has been interpreted in different ways during its relatively short history, depending on the context in which it is used. However, often it has been connected to the idea of continuous economic growth, especially by the Organization for Economic Co-operation and Development (OECD) and the European Union. Economic growth as a policy goal is difficult to align with planetary well-being as it has been previously linked to overconsumption of materials, ecosystem destruction, inequality in human societies, and the general destruction of life on Earth (see Kortetmäki *et al.*, 2021). Hence, the concept of sustainable development too can be regarded as a direct heir of the Enlightenment tradition and the belief in human progress based on instrumental rationality.

Sustainable development-related frameworks are globally influential in the field of education to the extent that they can even be referred to as a paradigm, delineating the set of concepts and beliefs that prefigure public debate during a particular period of time. The ambiguity of sustainable development can be seen in the ambivalence surrounding how the concept is interpreted and used by different scholars. Therefore, some educational researchers consciously avoid using the term sustainable development or are sceptical of the concept of sustainability. However, there are also approaches that use the word sustainability but still want to distinguish themselves from the idea of continuous growth implied by the concept of sustainable development. Further still, there are some frameworks in the field of education that make no reference at all to either of these concepts (e.g., Bianchi, 2020; Connelly, 2007; Jickling and Wals, 2008; Snaza *et al.*, 2014).

Next, we briefly introduce some well-known and commonly used frameworks as alternatives to the prevailing sustainable development paradigm, that is, alternatives that support the idea of *education for planetary well-being*. The concept of *sustainability as education*, as defined by Stephen Sterling (2001, 2010) and Arjen Wals (2006, 2015), who are among the earliest and most central authors representing the move, called for holistic behavioural change and transformative learning. Sterling's (2001) original distinction between sustainability as education and *education for sustainable development* highlights that the latter was framed to raise awareness without challenging the existing institutions and status quo. Sustainability as education, instead, requires a profound change in one's worldview, switching from a dualistic, hierarchical worldview to systems understanding and relational sustainability competences.

Global Citizenship Education Otherwise (Andreotti, 2015; Stein and Andreotti, 2021) criticizes the framework of the taken-for-granted Eurocentric knowledge system in regard to how, for example, Sustainable Development Goals are framed and understood as global goals by the United Nations. The education for global citizenship promotes the transition from a singular universal belief or knowledge to an approach of listening and including counternarratives on knowledge in the curriculum. In this approach, education is viewed as a dialogue that considers diverse historical, political, and knowledge foundations (Andreotti, 2015).

In the Nordic countries, the concept of *eco-social education* (or *eco-social Bildung*) is one of the more influential current frameworks that calls for transformation by stressing the acute need for prioritizing diversity of life on Earth in the value system. Eco-social education has been part of the public debate for more than a decade, and it is explicitly mentioned, for example, in the national core curriculum of Finland (Finnish National Board of Education, 2014; Halinen, 2018; Lehtonen, Salonen and Cantell, 2018). Eco-social education emphasizes ecology, takes climate crises seriously, and considers planetary boundaries (Rockström *et al.*, 2009) instead of the economy as the basis for social and economic well-being (Salonen and Konkka, 2015).

Ecojustice education (Martusewicz, Edmundson and Lupinacci, 2011, p. 9) highlights “the necessary interdependent relationship of humans with the land, air, water, and other species with whom we share this planet”. Ecojustice education calls for critical awareness of the unequal power dynamics related to binaries (e.g., men/women, white/other, European/other, culture/nature, reason/emotion, science/local), indigenous knowledges, and how these inequalities are sustained across different languages and means of communication. The theoretical foundations of ecojustice education include ecofeminism and neo-agrarianism, with a shared dedication to a feminist ethic of care for ecological social justice and posthumanism (*ibid.*).

Other examples of approaches that avoid using the term “sustainable development” are *environmental education*, in its advanced mode, (Reid *et al.*, 2021) and the hybrid concept of *environmental and sustainability education* (Wals, Weakland and Corcoran, 2017). Both of these can be regarded as taking a critical stance toward anthropocentrism. Additionally, we acknowledge that critical approaches to human-centred education have also been raised by posthumanist writers (e.g., Morris, 2015; Snaza *et al.*, 2014). Overall, posthuman education has wider perspectives in its critic of humanism in education, such as colonialism and complex relations not only between humans and nonhuman animals, but also technology.

Criticism of anthropocentrism can be seen as a distinguishing factor according to which education for sustainability can be divided into two different types of approaches: Weak and strong (Connelly, 2007). The *weak* form is associated with continuous technological development and economic growth, or, at best, so-called ecological modernization (*ibid.*, p. 270) emphasizing efficiency in energy use and recycling of materials. The weak approach also includes an assumption about sustainable development benefitting all humanity, but, in reality, the approach accepts drastic inequalities between different human communities, such as the division between the global North and global South. Education for sustainability in the *strong* sense, in contrast, could be translated as *eco-socialism* (*ibid.*) with an emphasis on a just transition toward the well-being of all life on Earth, which aligns well with the concept of planetary well-being.

Based on the review above, we conclude that our concept of *education for planetary well-being* builds on the ideas raised by many of the current frameworks. In many respects, *education for planetary well-being* agrees with the mentioned frameworks; it advocates non-anthropocentric and posthumanist thinking as well as sustainability in the strong sense. However, it is more explicit in instilling the educational approach with the encompassing idea of planetary well-being as a state in which all organisms, including humans, can realize their typical characteristics and capacities.

Dialogue as an ontological and pedagogical principle

Our conceptualization of *education for planetary well-being* is rooted in a dialogic relationship between humans and other lifeforms on Earth, one in which it is assumed that human well-being is built in dialogue with the rest of nature.

Dialogue can be identified implicitly in many of the current frameworks, such as in sustainability as education, global citizenship education otherwise, and ecojustice education. In *education for planetary well-being*, however, the dialogical way of being is central and explicitly present, drawing from Buber's (2004) dialogical philosophy and posthumanism (Braidotti, 2013, 2019).

The opposite of a dialogical relationship is a monologic (and an instrumental) relationship. The monological relationship is based on the aforementioned dualistic assumption that nature is understood as an object separate from humans and as an instrument for human well-being. In a dialogical relationship, humans are viewed as one of the species living in a given ecological niche of the Earth system and as largely dependent on and connected to different ecosystems and various forms of life on Earth. It is only through the interaction of species in and between ecosystems, including human societies, that well-being occurs (see Kortetmäki *et al.*, 2021, p. 3). The dialogic approach provides an ontological basis for the concept of *education for planetary well-being*.

As an ontological principle, dialogue can be regarded as a human way of being where the relations between beings are more fundamental than the beings themselves and where the ethical aspect of these relations is emphasized. Beings are understood to be constructed through these relationships, which are characterized by interconnectedness, diversity, and respect for alterity. The nature of this ontological "in-betweenness" has been aptly described by Martin Buber (2004) as two basic modes of existing, representable as word-pairs: *I-it* and *I-Thou*. According to Buber, the monological *I-it* relationship is characterized by the experience of a detached object and a concept of oneself as an isolated subject of experience that defines another being according to one's interests. According to Buber, one can be truly human only in a dialogical relation between *I* and *Thou*, where the other is encountered openly without any restricting classification. Hence, as a true "other", *Thou* has an inherent value.

Applied to the planetary well-being concept, this means that both humans and the rest of nature have an absolute value, or rather, that human dignity is best realized through the recognition of the dignity of nature. In this case, human beings are not seen as separate from the rest of the world, but as embodied being who co-exists through senses and affects. These ideas of co-existence and interdependence are also typical of posthumanism. For example, Braidotti (2019) calls to become aware of human embodiment and accountability to the way one affects and is affected in the dynamic web of human and nonhuman relations.

Education for planetary well-being requires dialogic consideration and an empathic understanding of other species' needs also in the pedagogical practice. Dialogical practice is a way of learning new, posthuman, and even planetary ways to relate to other species (see Davies and Renshaw, 2020; Saur and Sidorkin, 2018). However, the needs of different species are often conflicting and evoke challenging ethical questions that should be acknowledged and discussed (Valtonen, 2022). Posthumanism offers a view of pedagogy that emphasizes a critical awareness

of the highly unequal power relations between humans and Earth's "others" and embodied and sentient being (Braidotti, 2019). Participation in a collective dialogic practice is a moral phenomenon focused on the nature of our identity and existence as humans (Wegerif, Mercer and Major, 2020) and on how we are connected to the well-being of the whole planet.

Dialogue as pedagogical practice is based on the collaborative construction of knowledge through interaction between learner and teacher. The dialogical principle is an alternative to monological teaching's mere transmission of knowledge from a teacher to a learner. In dialogical teaching, learners are not regarded as objects of a teacher but rather as active subjects of knowledge construction. In this sense, one could say that *education for planetary well-being* is essentially based on constructivist learning (Tynjälä and Gijbels, 2012).

According to Alexander (2020), dialogic talk is understood to be collective, affirmative, and reciprocal. This means that learners and teachers address learning tasks together and are able to express their ideas. It is also crucially important to listen to others and profoundly explore alternative viewpoints. Ideally, dialogue is deliberative, cumulative, and purposeful. Based on dialogue, something new emerges. However, this does not mean that learning goals cannot be set in dialogic teaching. Quite the opposite, dialogical learning can be structured towards a specific learning outcome. In the context of planetary well-being, the dialogue should focus on personal meaning-making, emphasizing strong sustainability, planetary boundaries, and social justice.

Dialogical teaching in terms of *education for planetary well-being* calls for humility and empathetic openness to alterity in our human way of relating to all life on Earth. Dialogue thus enables transformative learning instead of a socialization to current practices and belief systems: It promotes a structural shift in the basic premises of thought, feeling, and action that can fundamentally alter the human way of being in the world (Mezirow, 1994; O'Sullivan, Morrell and O'Connor, 2002; Wals, 2011).

A new measure for humanity: Responsibility for planetary well-being

This chapter has explored how planetary well-being appears in the context of education in relation to other frameworks, and how planetary well-being could be promoted in education through dialogue. *Education for planetary well-being* aligns with many of the current approaches, embracing transformative learning towards social change, aiming for humanity to live in balance with other lifeforms on Earth and within the limits of the planet. It can be viewed as the culmination of these developments, offering a new stepping stone for reaching a shared goal: The well-being of all inhabitants on planet Earth.

The main argument of this chapter is that what is good for humans can no longer be regarded as the guiding premise for education; instead, what is good for all life

on Earth should become the new rule. Therefore, a new theorem of *education for planetary well-being* is introduced to replace the motto of humanism, *homo mensura* or human is the measure of everything. Now, in accordance with posthumanist thinking, the guiding theorem can be turned into *natura mensura* or nature is the measure of everything (Niiniluoto, 2015). It is evident that a shift in pedagogy is needed, away from the perspective of humanistic anthropocentrism and towards posthumanism with an emphasis on the well-being of both human and nonhuman lifeforms.

Nevertheless, the transition from classical humanism to a posthumanist and planetary perspective does not mean that humans should not be the central focus of education. Humankind must reclaim its name as *Homo sapiens*, the wise human. Accordingly, our proposal for a basic theorem of *education for planetary well-being* is the following: *Responsibility for planetary well-being is the new measure of humanity*. It is worth pointing out that this theorem does not undermine human dignity, rather the opposite. By following this principle, human beings could paradoxically demonstrate their greatness by admitting their smallness before nature, or rather *within* nature. This new motto for humanity would be the starting point of *planetary wisdom*, which is a human ability that enables and promotes planetary well-being, and thus helps us to build a world worth living in.

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Note

- 1 This chapter is the result of a collective effort and intense discussions among the authors. All authors contributed to the work significantly and are listed in alphabetical order, except for the first and the last author.

References

- Alexander, R. (2020) *A Dialogic Teaching Companion*. London: Routledge.
- Andreotti, V. (2015) 'Global citizenship education otherwise. Theoretical and pedagogical insights', in Abdi, A.A., Schultz, A. and Pillay, T. (eds.) *Decolonizing Global Citizenship Education*. Rotterdam: Brill Sense, pp. 221–229.

- Bianchi, G. (2020) *Sustainability Competences*. EUR 30555 EN. Luxembourg: Publications Office of the European Union. <https://doi.org/10.2760/200956>
- Braidotti, R. (2013) *The Posthuman*. London: Polity.
- Braidotti, R. (2019) *Posthuman Knowledge*. Cambridge: Polity Press.
- Buber, M. (2004) *I and Thou*. London: Continuum.
- Carson, R. (1962) *Silent Spring*. Boston, MA: Houghton Mifflin.
- Connelly, S. (2007) 'Mapping sustainable development as a contested concept', *Local Environment*, 12(3), pp. 259–278. <https://doi.org/10.1080/13549830601183289>.
- Davies, K. and Renshaw, P. (2020) 'Who's talking? (and what does it mean for 'us'): Provocations for beyond Humanist dialogic pedagogies', in Mercer, N., Wegerif, R. and Major, L. (eds.) *The Routledge International Handbook of Research on Dialogic Education*. London: Routledge. pp. 38–49. <https://doi.org/10.4324/9780429441677>
- Ennser-Kananen, J. and Saarinen, T. (eds.) (2022) *New Materialist Explorations into Language Education*. Cham: Springer. <https://doi.org/10.1007/978-3-031-13847-8>
- Finnish National Board of Education (2014) *National Core Curriculum for Basic Education*. Helsinki: Finnish National Board of Education.
- Halinen, I. (2018) 'The new educational curriculum in Finland', *Improving the quality of childhood in Europe*, 7, pp. 75–89.
- Heikkinen, H. et al. (2023) 'Miten muuttaa käytäntöjä ihmisen ja luonnon kannalta kestäviksi? Ekososiaalinen sivistys käytäntöarkkitehtuuriteorian valossa [How to change practices to sustainable from the perspective of human and nature? Eco-social education in the light of the theory of practice architectures]', *Kasvatus*, 54(1), pp. 64–76.
- Hietalahti, J. (2022) *Ihmisyyyden ytimessä. Filosofisen humanismin idea [In the Core of Humanity. The Idea of Philosophic Humanism]*. Helsinki: Gaudeamus.
- Horkheimer, M. and Adorno, T.W. (1972) *Dialectic of Enlightenment*. New York: Seabury Press.
- Jickling, B. and Wals, A.E.J. (2008) 'Globalization and environmental education: Looking beyond sustainable development', *Journal of Curriculum Studies*, 40(1), pp. 1–21. <https://doi.org/10.1080/00220270701684667>
- Johnson, C. et al. (2020) 'Global shifts in mammalian population trends reveal key predictors of virus spillover risk', *Proceedings of Royal Society B Biological Sciences*, 287, 20192736. <https://doi.org/10.1098/rspb.2019.2736>
- Kaukko, M. et al. (2021) 'Learning to survive amidst nested crises: Can the coronavirus pandemic help us change educational practices to prepare for the impending eco-crisis?', *Environmental Education Research*, 27(11), pp. 1559–1573. <https://doi.org/10.1080/13504622.2021.1962809>
- Kortetmäki, T. et al. (2021) 'Planetary well-being', *Humanities and Social Sciences Communications*, 8, p. 258. <https://doi.org/10.1057/s41599-021-00899-3>
- Laurie, R. et al. (2016) 'Contributions of education for sustainable development (ESD) to quality education: A synthesis of research', *Journal of Education for Sustainable Development*, 10(2), pp. 226–242. <https://doi.org/10.1177/0973408216661442>
- Lehtonen, A., Salonen, A.O. and Cantell, H. (2018) 'Climate change education: A new approach for a world of wicked problems', in Cook, J. (ed.) *Sustainability, Human Well-Being, and the Future of Education*. Cham: Palgrave Macmillan, pp. 339–374. <https://doi.org/10.1007/978-3-319-78580-6>
- Martusewicz, R.A., Edmundson, J. and Lupinacci, J. (2011) *EcoJustice Education. Towards Diverse, Democratic, and Sustainable Communities*. London: Routledge.
- Mezirow, J. (1994) 'Understanding transformation theory', *Adult Education Quarterly*, 44(4), pp. 222–232. <https://doi.org/10.1177/074171369404400403>

- Morris, M. (2015) 'Posthuman education and animal interiority', in Snaza, N. and Weaver, J. (eds.) *Posthumanism and Educational Research*. London: Routledge, pp. 43–55.
- Niiniluoto, I. (2015) *Hyvän elämän filosofiaa [Philosophy of the Good Life]*. Helsinki: Suomalaisen kirjallisuuden seura.
- O'Sullivan, E., Morrell, M., and O'Connor, M.A. (2002) *Expanding the Boundaries of Transformative Learning. Essays on Theory and Practice*. New York: Palgrave.
- Reid, A. et al. (2021) 'Scientists' warnings and the need to reimagine, recreate, and restore environmental education', *Environmental Education Research*, 27(6), pp. 783–795. <https://doi.org/10.1080/13504622.2021.1937577>
- Robottom, I. (1992) *Environmental Education: Practice and Possibility*. Melbourne: Deakin University.
- Rockström, J. et al. (2009) 'Planetary boundaries: Exploring the safe operating space for humanity', *Ecology and Society*, 14(2), p. 32. Available at: <http://www.ecologyandsociety.org/vol14/iss2/art32/> (Accessed: 6 January 2023).
- Ruuska, T. (2017) *Reproduction of Capitalism in the 21st Century: Higher Education and Ecological Crisis*. PhD dissertation. Aalto University School of Business. Available at: <https://aaltodoc.aalto.fi/handle/123456789/26627> (Accessed: 6 January 2023).
- Salonen, A.O. and Konkka, J. (2015) 'An ecosocial approach to well-being: A solution to the wicked problems in the era of Anthropocene', *Foro de Educación*, 13(19), pp. 19–34.
- Saur, E. and Sidorkin, A.M. (2018) 'Disability, dialogue, and the posthuman', *Studies in Philosophy and Education*, 37, pp. 567–578. <https://doi.org/10.1007/s11217-018-9616-5>
- Snaza, N. et al. (2014) 'Toward a posthuman education', *Journal of curriculum theorizing*, 30(2), pp. 39–55.
- Stein, S. and Andreotti, V. (2021) 'Global citizenship otherwise', in Bosio, E. (ed.) *Conversations on Global Citizenship Education: Research, Teaching and Learning*. London: Routledge, pp. 13–36.
- Sterling, S. (2001) *Sustainable Education: Re-Visioning Learning and Change*. Schumacher Briefings, no. 6. Bristol: Green Books.
- Sterling, S. (2010) 'Transformative learning and sustainability: Sketching the conceptual ground', *Learning and Teaching in Higher Education*, 5(11), pp. 17–33.
- Tynjälä, P., and Gijbels, D. (2012) 'Changing world: Changing pedagogy', in Tynjälä, P., Stenström, M-L. and Saarnivaara, M. (eds.) *Transitions and Transformations in Learning and Education*. Dordrecht: Springer, pp. 205–222. <https://doi.org/10.1007/978-94-007-2312-2>
- UNESCO (2017) *Education for Sustainable Development Goals: Learning Objectives*. Paris: UNESCO. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000247444> (Accessed: 23 December 2022).
- UNESCO (2022) *Berlin Declaration on Education for Sustainable Development; Learn for Our Planet: Act for Sustainability*. UNESCO World Conference on Education for Sustainable Development 2021. Programme and meeting document. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000381228> (Accessed: 23 December 2022).
- Valtonen, V. (2022) *Kanssakuljeskelua: Monilajisen kasvatuksen teoreettisia ja pedagogisia lähtökohtia [Walking with: Theoretical and Pedagogical Contributions of Multi-species Education]*. PhD dissertation. University of Helsinki. Available at: <http://urn.fi/URN:ISBN:978-951-51-8531-0> (Accessed: 23 December 2022).
- Värri, V-M. (2018) *Kasvatus ekokriisin aikakaudella [Education in the era of ecocrisis]*. Tampere: Vastapaino.
- Wals, A.E.J. (2006) 'The end of ESD ... the beginning of transformative learning—emphasizing the E in ESD', in Cantell, M. (ed.) *Proceedings of the Seminar on Education for Sustainable Development*. Helsinki: Finnish UNESCO Commission, pp. 42–59.

- Wals, A.E.J. (2011) 'Learning our way to sustainability', *Journal of Education for Sustainable Development*, 5(2), pp. 177–186. <https://doi.org/10.1177/097340821100500208>
- Wals, A.E.J. (2015) 'Beyond unreasonable doubt. Education and learning for socio-ecological sustainability in the Anthropocene', Inaugural address, 17 December, Wageningen University. Available at: <https://edepot.wur.nl/365312> (Accessed: 6 January 2023).
- Wals, A.E.J., Weakland, J. and Corcoran, P.B. (2017) 'Introduction', in Corcoran, P.B., Weakland, J. and Wals, A.E.J. (eds.) *Envisioning Futures for Environmental and Sustainability Education*. Wageningen: Wageningen Academic Publishers, pp. 19–30. <https://doi.org/10.3920/978-90-8686-846-9>
- WCED (1987) *Our Common Future [Brundtland report]*. A/42/427. Geneva: United Nations General Assembly. Available at: <https://digitallibrary.un.org/record/139811?ln=en> (Accessed: 6 January 2023).
- Wegerif, R., Mercer, N. and Major, L. (2020) 'Introduction', in Mercer, N., Wegerif, R. and Major, L. (eds.) *The Routledge International Handbook of Research on Dialogic Education*. London: Routledge, pp. 1–8. <https://doi.org/10.4324/9780429441677>