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To cite this article: Henna Rouhiainen & Jenna Aarnio (02 Nov 2025): Beyond anthropocentrism: ethical pluralism and animal perspectives in Finnish primary school textbooks, Environmental Education Research, DOI: [10.1080/13504622.2025.2579508](https://doi.org/10.1080/13504622.2025.2579508)

To link to this article: <https://doi.org/10.1080/13504622.2025.2579508>



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# Beyond anthropocentrism: ethical pluralism and animal perspectives in Finnish primary school textbooks

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## ABSTRACT

Sustainability transformation requires that Western societies reconsider the values and worldviews they assign to animals. This study examines whether formal education in Finland supports this change by conveying non-anthropocentric and pluralistic ethical perspectives of animals in primary school textbooks. We conducted a theory-based content analysis on history, social studies, environmental studies, religious education, and ethics textbooks, exercises, and teachers' materials for grades 5–6 in Finland. Our findings reveal that the textbooks contain both anthropocentric and non-anthropocentric ethical perspectives of animals. While anthropocentric and ecocentric worldviews were pronounced, relational perspectives were notably scarce. Additionally, there was a clear discrepancy between different school subjects and different textbook series in the variety and number of perspectives and value discussion. We suggest that textbook publishers aim at increasing ethical reflection, relational perspectives, and a better integration of values and worldviews related to animals across subjects.

## ARTICLE HISTORY

Received 11 February 2025  
Accepted 19 October 2025

## KEYWORDS




Primary school textbooks; animals; pluralism; ethics; worldviews

## SUSTAINABLE DEVELOPMENT GOALS

SDG 4: Quality education; SDG 14: Life below water; SDG 15: Life on land

## Introduction

The ethical and ecological implications of human-animal relations are increasingly recognized as integral to environmental and sustainability education. The use of animals for human purposes significantly contributes to global environmental challenges. In particular, large-scale raising of animals for food accelerates biodiversity loss and contributes to climate change through intensified land and freshwater use, as well as elevated greenhouse gas emissions. Other threats to biodiversity include overexploitation of animals, e.g. overfishing and wildlife trade (IPBES 2019). Furthermore, the suffering of animals is an increasing ethical concern. With the so-called animal turn, sustainability scholars and environmental educators have suggested that, in addition to ecological significance of species, attention should be paid to the subjectivity and rights of individual nonhuman animals<sup>1</sup> as sentient and cognitively

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 Supplemental data for this article can be accessed online at <https://doi.org/10.1080/13504622.2025.2579508>.

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capable agents and equal partners on the planet (Dolby 2019; Sebo et al. 2022; Twine 2010).

Responding to urgent environmental and sustainability problems requires a profound and transformative social and cultural change (Díaz et al. 2019; Horlings 2015; O'Brien 2012), including the adoption of a less human-centred worldview (e.g. Fisher 2013; Kopnina et al. 2018; Pascual et al. 2023; Rolston 2020). However, societal discourse has so far only minimally recognized the need for Western societies to re-evaluate their social and cultural relationships with other species and animal individuals, as well as the values and worldviews underlying these relationships (Bowers 1993; Lock, Wonneberger, and Steenbeek 2024).

This study seeks to understand what kind of values and worldviews primary school textbooks convey on animals. Textbooks offer the basic content of formal education and convey students the belief and value systems of the dominant culture (Bowers 1993). Thus far, the perspective of nonhuman animals has been mostly missing from education concerning the environment and sustainability (Hatten-Flisher and Martusewicz 2018; Lindgren and Öhman 2019). Furthermore, teaching, especially in science education, has been based on anthropocentric worldviews, in which animals are seen as objects of utilization, and the intrinsic and relational value of animals is not recognized (Jeong et al. 2021; Pedersen 2010).

In this study it is argued that the starting point for including the animal perspective in formal education should be a pluralistic educational approach, which covers different school subjects and considers a multitude of ethical perspectives related to the value of animals and different worldviews. In the field of environmental and sustainability education (ESE), pluralism is an approach that is 'open to conflicting views, rather than an education that teaches consensus' (Lindgren and Öhman, 2019, 1200). It is considered to help students navigate a culturally and ecologically changing, and polarizing, world (Wals 2010; Rudsberg and Öhman 2018), as it emphasizes democracy, participation and a diversity of values among humans. We think that a minimum requirement for a pluralistic education, that enables incorporating the perspective and interests of animals, is that it includes diverse ethical perspectives that attribute not only instrumental value but also intrinsic and relational value to animals. This could serve as a pragmatic starting point for examining animal perspectives and interests as part of teaching, alongside human perspectives and interests.

This research describes the values and worldviews attached to animals in Finnish primary school textbooks and related educational materials. We aim to find out whether textbooks are supportive of the in-depth cultural change that sustainability transformation necessitates by providing students with pluralistic, including non-anthropocentric and non-instrumental, ethical perspectives of animals. Pluralistic education can help students seek solutions to environmental and sustainability problems in a collaborative manner that considers the inclusion of nonhuman species (Cheng and Monroe 2012).

To our knowledge, this study is the first to examine ethical perspectives and explicit values and worldviews of animals across multiple school subjects simultaneously and systematically. The focus is on textbooks, as well as associated teachers' materials and student exercises, in history, social studies, environmental studies, religious education,

and ethics for grades 5–6 in Finland. The research combines perspectives from environmental and sustainability education research (with an emphasis on a pluralistic approach), environmental and animal ethics, and environmental management literature related to ecosystem services. The findings can inform the development of learning materials that respond to the need for sustainability transformation in the context of nonhuman animals.

## **Theoretical framework**

### ***A need for a change in values and worldviews related to animals***

Major environmental challenges, such as climate change and biodiversity loss, threaten the functioning of ecosystems and, consequently, the well-being of both humans and a multitude of nonhuman animal species (IPBES 2019; IPCC 2023; Richardson et al. 2023). Yet, efforts to respond to these challenges with a more sustainable way of life have been primarily based on anthropocentric, or human-focused, concerns (e.g. Rolston 2020). Many sustainability researchers argue that sustainable living requires in-depth changes in the way we connect with, value and treat nature's ecological systems, other species and individual organisms (Abson et al. 2017; Davelaar, 2021; Pascual et al. 2023).

In the field of environmental sustainability and management, interest in nonhuman animals has traditionally focused on animals' holistic role in ecosystem functioning and the harm that the decline of animal species could cause to humans. However, understanding of animal cognition and sentience has significantly grown in recent decades and this has also influenced considerations of animal ethics. Neuroscientific, biological and psychological studies have shown that many animal species have cognitive abilities such as belief-formation, memory, learning, inference and communication and some (including species of mammals, birds, fishes, cephalopods, and even many invertebrates) have some form of 'phenomenal consciousness', i.e. the ability to experience one's existence (Birch, Schnell, and Clayton 2020; Le Neindre et al. 2017; Mazor et al. 2023). The cognitive abilities and sentience of animals has been argued to offer the basis for the moral value of animals as individuals. Thereby, different theories in animal ethics have suggested that individual animals have either inherent value or even rights, or that at the very least their welfare needs to be protected (e.g. Regan 1983; Singer 1975).

### ***Education as conveyor of values and worldviews related to animals***

Starting early in students' lives, education can promote a cultural change that considers not only human wellbeing but also the wellbeing of nonhuman species and individuals (Bowers 1993; Gaard 2008; Russell and Spannring 2019). Education can also question familiar worldviews that emphasize immediate, economic benefits for humans, and equip people with skills to promote societies that are more sustainable from the perspective of all species. This requires that students should be encouraged to re-evaluate their personal and cultural values and worldviews related to other species, including animals (Sterling 2011).

In schools, values and attitudes related to animals are conveyed to students particularly through curricula, textbooks and teachers (Pedersen 2010; Fonseca 2023). This study focuses on textbooks, because they are a central medium in teaching and learning and teachers' primary tool for planning lesson content and assignments (Chiappetta et al. 2006; Moate 2021). School textbooks are based on the curriculum, and therefore they reflect 'official knowledge', officially accepted cultural heritage, values and worldviews (Apple and Christian-Smith 2017; Issitt 2004). In Finland, there are very few mentions of animals in the National curriculum (Finnish National Agency for Education [FNAE] 2014). However, the curriculum emphasizes the ability to address conflicts through ethical reflection that is grounded in respect and compassion for other people and the environment. We interpret this to mean that the Finnish curriculum supports a pluralistic educational approach in relation to nonhuman species. On the other hand, the Finnish national curriculum is very general in nature, and textbooks together with teachers' personal conceptions have a significant influence on the contents and perspectives of teaching (Moate 2021).

Previous studies concerning values and worldviews related to animals in school textbooks have found that animals are mostly presented from anthropocentric and instrumental perspectives. In their study of Finnish textbooks of religious education for grades 1 and 2, Mikander et al. (2024) found that the instrumental use of animals was a very common theme, but the books also emphasized the intrinsic value of many animal species. The importance of caring about animals and other humans, in a relational sense, was also brought up. The authors note that religious education and ethics textbooks could include more discussion on animal ethics (Mikander et al. 2024).

In Pakistan, English language textbooks for grades 3–5 portrayed animals mainly from an anthropocentric and instrumental perspective (Zahoor and Janjua 2020) and similar results have been obtained in other textbook studies. In Ethiopia, grades 1–4 textbooks in environmental studies represented mostly an anthropocentric, hierarchical and instrumental relationship between humans and the rest of nature, including animals (Gugssa, Aasetre, and Debele 2021). In Poland, science textbooks for grade 4 emphasized mostly anthropocentric ethics – however, viewpoints highlighting the intrinsic value of animals were also brought up (Gola 2017). In South Korea, geography textbooks for secondary school presented animals as mainly instrumentally valuable (animals as livestock), but intrinsic values were also presented (animals as part of ecological systems) (Cho, Kim, and Stoltman 2022). The authors note that relational perspectives were missing. In Portugal, the representation of animals used in food production was studied in grades 1–6 textbooks (Fonseca 2022) and secondary and high school textbooks (Fonseca and Vizachri 2023). The author found that the moral consideration of companion animals is favoured, but similar principles are not applied for factory-farmed animals. In a similar vein, a study of German biology books for lower secondary school found that textbooks discriminate between companion and farm animals by representing companion animals as more intrinsically valuable and worthy of moral concern, whereas farm animals are represented as resources for human use (Folsche et al. 2025).

The above-mentioned studies describe the status of animals in relation to humans; however, the studies have not examined explicit expressions of values related to

animals. We find that they should be examined, since learning that supports sustainability transformation requires students to reflect deeply and critically on personal and cultural values and worldviews (Sterling 2011), and textbooks should provide content that enables this in a multi-faceted manner. Furthermore, supporting students' understanding of different values, knowledge production methods and discourses can serve students' broader competences to function in changing social and environmental circumstances caused by globalization (Stephenson 1998).

### ***Values and worldviews in education on the environment, sustainability, and animals***

The animal issue became part of the ESE discussion relatively late, in the 2010s. Historically, environmental and animal-related education and research developed along partly separate paths, sometimes marked by ideological tensions (Spannring 2017).

The early forms of environmental and animal-related educational movements emerged in the late nineteenth century. Nature conservation education was primarily rooted in an interest in natural history and the human-caused environmental changes in Western Europe and North America (Disinger 1985; McCormick 1991). In contrast, humane education, originating in Britain, emphasized the moral development of children through the kind treatment of animals, grounded in Romanticist ideals (Unti and DeRosa 2003; Rouhiainen and Vuorisalo 2014).

The modern environmental and animal rights movements, along with the associated educational thinking, emerged in the 1960s and 1970s shaped by distinct currents of political activism. The environmental movement responded to ecological impacts caused by industrialization. Educationally, it was particularly grounded in natural scientific approaches (MacIntyre, Tilbury, and Wals 2024), in which anthropocentric and neoliberal ideologies have been common (Jeong et al. 2021). However, it also incorporated a strong social dimension from the beginning (UNESCO 1978). Meanwhile, the animal rights movement was also strongly influenced by civil rights and women's liberation movements, which sought to expose and challenge different forms of power and oppression. Modern humane education and animal rights education have adopted critical social science perspectives and they emphasize empathy as a multidisciplinary concept (Humes 2008; Thomas and Beirne 2002).

Environmental education and education related to animals began to converge as a result of the so-called 'animal turn' in the 2010s (Dolby 2019). This shift questioned the cultural and political construction of animals and highlighted interspecies relationships and nonhuman agency (Dolby 2019; Lindgren and Öhman 2019). Research in these fields have found common theoretical ground from, for example, ecofeminism, posthumanism, and critical pedagogical and ecopedagogical approaches (Dolby 2019; Gaard 2008; MacIntyre, Tilbury, and Wals 2024; Spannring 2017). A central premise uniting ESE and animal-related education is the critique of the human-nature dualism, which positions humans as separate from and superior to other species. This worldview is seen as a root cause of both environmental degradation and animal exploitation (Dolby 2019; Sterling 2011). Scholars have called for a profound transformation of values and worldviews to address these intertwined issues (Dolby 2019; Jeong et al. 2021; Spannring 2017; Sterling 2011).

A focus on the re-examination of values and worldviews related to other species, including animals, highlights the importance of environmental and animal ethics in ESE. Ethical pluralism offers a democratic and non-instrumental framework for integrating these perspectives, aligning with the broader goals of transformative education.

### ***Animal-conscious pluralism as an educational approach in advancing sustainability transformation***

According to democratic and pluralistic education, avoiding indoctrination (the inculcation of certain, predefined values and ideologies on students) is central to education (e.g. Jickling 1994; Wals 2010). Pluralists argue that schools should create an environment where learners explore diverse values, develop their own moral reasoning and ethics, and become active moral and democratic agents (Rudsberg and Öhman 2018; Sund 2015; Wals 2010). This aligns with transformative learning, which values critical reflection of personal worldviews (Sterling 2011), making pluralism a good approach for transformative education.

However, critical animal scholars have accused pluralism of being based on anthropocentric presuppositions (Kopnina and Cherniak 2016). Kopnina and Cherniak (2016) have called for 'inclusive pluralism', based on critical pedagogy and non-anthropocentric ethics and advocating the interests of humans as well as more-than-humans. Yet, their approach can be seen as prioritizing animal rights and deep ecology and questioning the neoliberal market ideology over other values and worldviews. Lindgren and Öhman (2019), in turn, have suggested a critical pluralist approach that deconstructs human superiority and recognises nonhuman animals' agency but is not necessarily based on animals' mental capacities or human-like characteristics.

We support the view that nonhuman animals' perspectives should be better recognized and represented in education. In this study, we take the position that the starting point for including the animal perspective in formal education should be a pluralistic educational approach, which covers different school subjects and considers a multitude of values and worldviews. Such education should expose rather than conceal conflicting views (Tryggvason et al. 2023). While pluralism involves the risk of relativism, we argue that skilled teachers can guide students to critically evaluate worldviews, formulate their own opinions, and engage in dialogue – skills that are essential in an increasingly pluralistic and globalized world (Rudsberg and Öhman 2018).

This type of education requires that educational materials reflect ethical diversity. Textbooks should go beyond anthropocentric and instrumental portrayal of animals to include animals' value in themselves, i.e. their intrinsic value, from a variety of non-anthropocentric perspectives. Furthermore, textbooks should include relational values, i.e. values based on the relationships between humans and animals, as they can foster more sustainable human-animal relationships on an everyday level.

### ***Researching values and worldviews related to animals: an ethical perspective***

In this study, we aim to describe what kinds of values and worldviews are attached to animals in elementary school textbooks and whether they are sufficiently diverse to provide a basis for pluralistic ESE.

Values are defined differently in different research traditions (e.g. Dietz et al. 2005). We use an ethical interpretation of values, which means that values refer to animals' qualities or characteristics that are considered good, desirable and important (Dietz et al. 2005). The consideration of animals as important sources of food (e.g. meat or dairy products) is included in this definition. Valuing the nonhuman animal can also mean that it is presented as worthy of care or empathic interest (Aaltola 2018). Worldviews are understood as values-based ideas about what is morally significant: people, sentient or living individuals, and/or natural processes and nonhuman nature (Anderson et al. 2022).

The discussion about which individual and cultural values align with environmentally relevant or animal-friendly behaviour has centred around the question of whether nature and animals should be valued as *intrinsically valuable* (as an end/good in itself) or *instrumentally valuable* (as a means to further something else) (Dietz et al. 2005; Gruen 2021; Kopnina et al. 2018; Kronlid and Öhman 2013). Intrinsic value can be either *individual value* (animals are valuable as individuals) or *holistic value* (animals are valuable as part of ecological wholes such as populations or ecosystems) (Thompson 2016).

Worldviews, which are based on the intrinsic values of nature, are non-anthropocentric. Some scholars consider that non-anthropocentric worldviews are the only ethically sustainable starting points for the conservation of nonhuman nature and animals as well as for environmental and sustainability education (Bonnett 2002; Kopnina 2014, 2018; Postma 2006; Rolston 1985, 2020). Such worldviews include, for example, *zoocentric* (animal-centred), *ecocentric* (ecosystem-centred), or *biocentric* (life-centred) worldviews. In general, nature conservationists assign nonhuman animals holistic (ecocentric or biocentric) value, whereas animal rights protectionists emphasize animals' individual (zoocentric) value.

Some scholars and most environmental managers and politicians have supported an anthropocentric perspective as a pragmatic approach to the conservation of nature and animals (Hopwood, Mellor, and O'Brien 2005; Norton 2008; Tallis and Lubchenco 2014). This perspective is based on considering nature as having positive instrumental value to humans. (Instrumental value of nature or animals can also be considered negative, for example when animals are considered pests or carriers of diseases.) An example of an approach that is based on the instrumental valuation of nature is the ecosystem service framework (Reid et al. 2005), very commonly used in international environmental policy. Ecosystem services are 'the benefits people obtain from ecosystems'. These include *provisioning, regulating, cultural and supporting services*<sup>2</sup> (Reid et al. 2005, V). As environmental education is often considered an environmental policy tool (Wals 2012), many researchers see the concept of ecosystem services useful for education (e.g. Rodríguez-Loinaz and Palacios-Agundez 2024; Ruppert and Duncan 2017).

Instrumental valuation of nature, including the ecosystem services concept, has however been criticized for leading to prioritization of nature's economic and monetary value (e.g. McCauley 2006; Schröter et al. 2014). Critics have also pointed out that the intrinsic-instrumental value dichotomy has not been able to adequately capture how people actually value nature in Western nor in non-Western cultures (Anderson et al. 2022; Deplazes-Zemp and Chapman 2021; Muraca 2011).

As a response to this criticism, researchers and environmental managers have increasingly discussed so-called *relational values*<sup>3</sup> as a basis for conservation. According to many scholars, relationality expands the intrinsic versus instrumental value division offering a third value category. Relational values can refer to valuing that describes desirable, meaningful, non-substitutable relationships between humans and nature (e.g. Chan et al. 2016; Díaz et al. 2015; Himes and Muraca, 2018). Relational values are sometimes considered deeper and more complex than instrumental values (Himes and Muraca 2018) and better in capturing people's lived and experienced lifeworlds (Chan et al. 2016). In this study, a worldview that is based on the idea of relationality is called *pluricentrism*: a term that can be used to describe reciprocal and intertwined relationships between humans and other-than-human-beings, in which there is no single centre of priority (Pascual et al. 2023).

Relational values as a third value category have been brought into nature conservation discussion particularly by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES 2022). Relational values are also increasingly discussed in environmental and sustainability education. In fact, concepts closely related to relational values (such as connectedness with nature, care and kinship) have been central to environmental and sustainability education for a long time (dos Santos and Gould 2018).

In this study, we focus on the above-mentioned three value types, i.e. intrinsic (holistic or individual), instrumental, and relational values, as the basis of valuing nonhuman animals in school textbooks. Furthermore, we look for worldviews that are based on these three value types: anthropocentric worldviews based on the ecosystem service framework, non-anthropocentric worldviews of zoocentrism, ecocentrism, and biocentrism, as well as pluricentric worldviews.

Our study examines textbooks from multiple subjects simultaneously and systematically, focusing on explicit expressions or values and worldviews. This way, it is possible to compare textbooks of different subjects in the same context, find possible differences or contradictions between the content of different subjects, and form a comprehensive understanding of the whole of animal-related values and worldviews conveyed to students. As far as we know, no similar research exists so far. The findings can be used in developing learning materials that respond to the need to re-evaluate current anthropocentric values and worldviews and thus support sustainability transformation.

## Research aims and purpose

The aim of this study is to analyse and describe what kind of values and worldviews are attached to nonhuman animals in 5–6 grades in history, social studies, environmental studies, Lutheran religious education, and ethics textbooks and related educational materials in Finland. We seek to find out whether the textbooks enable pluralistic, transformative learning for sustainability by conveying not only instrumental and anthropocentric but also non-instrumental (intrinsic and relational) values and non-anthropocentric (zoocentric, biocentric, ecocentric, or pluricentric) worldviews of nonhuman animals.

More specifically, the research seeks to answer the following questions:

1. Do textbooks contain intrinsic, instrumental and/or relational valuing of animals?
2. Do textbooks contain non-anthropocentric worldviews regarding animals?

## Materials and methods

Research data consisted of a total of 16 textbooks for grades 5 and 6: four history books, two social studies books, four environmental studies books, four religious education books, and two ethics books. Grades 5–6 were chosen, because children's values develop and their connection to behaviour strengthens during this time (between 10 and 12 years of age), but values are not yet stabilized (Abramson, Daniel, and Knafo-Noam 2018). In addition to textbooks, all related exercise materials (in textbook and digital form) and teacher instruction materials were included in the analysis. The books were published by the two main textbook publishers in Finland after 2014 (after the latest Finnish National Curriculum was published). A list of the textbooks as well as examples of images in them can be found in the [Supplementary file](#).



As there are no specific methods for textbook research, research related to textbooks is usually based on the theories and methods used in the field in which the research is located (Bock 2018). The method used in this study was theory-driven content analysis (Graneheim, Lindgren, and Lundman 2017; Hsieh and Shannon 2005), based on predefined coding categories. However, these categories were slightly modified to better match the data, and thus the analysis also utilized an abductive approach to content analysis (Graneheim, Lindgren, and Lundman 2017). The categories were formed based on theory about intrinsic, instrumental, and relational values as well as anthropocentric, biocentric, ecocentric, zoocentric, and pluricentric worldviews, presented in the Introduction ([Table 1](#)).

First, all textbook pages, teachers' guidebook pages and exercises with any references to nonhuman animals (including wild animals, companion animals, and animals used as food) or representations of animal-based foods (e.g. meat, fish or dairy) or other products (e.g. skins or wool) were exported to the NVivo 14 program. The data consisted of 1608 files, most of which were individual textbook pages or exercises. Of these files, 217 files contained one or more explicit mentions of values or valuations related to animals. These expressions were searched in both text and images, which were interpreted in the broader context of a textbook chapter. When coding the data, explicit mentions of values and valuations were marked and coded into the predefined categories ([Table 1](#)). The data was coded in two stages in collaboration between the two authors. In the first phase, the first author coded 300 files and the second author coded randomly selected 15% of these files. All differences in the coding were discussed among the two authors as well as with three other researchers familiar with environmental and animal ethics. Based on the discussions, the coding categories were modified and refined. In the second phase, the first author coded the rest of the data and discussed all unclear cases with the second author. The categories were modified slightly as the classification progressed until the data was saturated (Hsieh and Shannon 2005). Overall, both authors went through approximately 20% of the files that contained mentions of values or valuations of animals.

## Results


The data included a total of 764 explicit expressions of value related to nonhuman animals. Typical examples of these expressions are presented in [Table 1](#), column

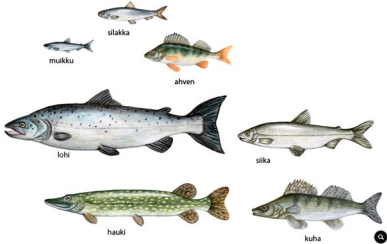
**Table 1.** Coding categories and excerpts from the data.

Worldview	Category description	Excerpt from data
Anthropocentrism	Prioritization (interest in and moral consideration) of humans	
Strong anthropocentrism	Strong prioritization of humans Only humans are morally valuable, animals are not morally considered	'A healthy portion [of food] is described by a plate model where half is vegetables, a quarter is potatoes, rice or pasta, and a quarter is meat or fish'. (Environmental studies/Series A)
		
Weak anthropocentrism	Prioritization of humans but, at the same time, the recognition of human dependence upon essential relationships to animals	'Why was a horse essential to a knight in warfare?' (History/Series B)
Zoocentrism	Prioritization of animals, ethical care directed at animals Prioritization is based on animals' mental and physical well-being and sentience, cognitive abilities, and emotions	'Animals must be treated well. It is forbidden to cause unnecessary pain and suffering to animals'. (Ethics/Series B)
Biocentrism	Prioritization of all individual living organisms	'Every plant, animal and human is unique'. (Religious education/Series B)
		
Ecocentrism	Prioritization of ecosystem integrity and function from a holistic and systemic perspective. This may include living and non-living nature.	'Why can it be said that swamp mosquitoes are important to Lapland's nature? Mosquitoes, other insects and their larvae are food for many migratory birds'. (Environmental studies/Series B)

*(Continued)*


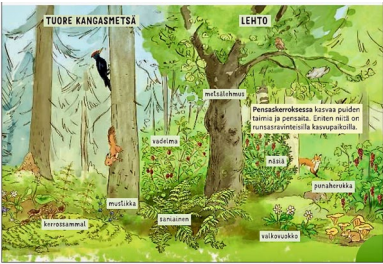
Table 1. Continued.

Worldview	Category description	Excerpt from data
Pluricentrism	<p>Prioritization of humans and animals simultaneously</p> <p>Prioritization of reciprocal and interdependent relationships between humans and animals</p>	 <p>(Environmental studies/Series A)</p>

Value	Category description	Example from data
Instrumental value	Animals are valuable or worthy of care or empathic interest as a means to some end or to satisfy some needs or interests of humans or other species or ecosystems.	
Positive instrumental value	Animals' value is based on the positive consequences they cause to humans or other nonhuman organisms or ecosystems	
Supporting or regulating ecosystem services	<ul style="list-style-type: none"> <li>• Positive consequences to humans are based on ecosystem functions performed by animals, including e.g. nutrient cycling</li> <li>• pollination</li> <li>• seed dispersal</li> </ul>	'It has been estimated that if bees disappeared, humanity would only survive for a few years'. (Religious education/Series B)
Provisioning and livelihood services	<p>Positive consequences to humans are based on concrete, livelihood and direct monetary benefits from animals to humans, including animals as food</p> <ul style="list-style-type: none"> <li>• animal skins, wool, meat/fish, honey</li> <li>• animals in entertainment or recreation</li> <li>• animal experiments or other medical uses</li> </ul>	<p>'Fishing can be a hobby or a profession. In Finland, the largest fish catches are taken from the open sea and the coasts. Lakes and rivers are also important fishing areas'. (Environmental studies/Series A)</p> 

(Continued)

Table 1. Continued.

Worldview	Category description	Excerpt from data
Social or cultural services	Positive consequences to humans are based on services provided by animals to humans for recreation <ul style="list-style-type: none"> <li>• labor</li> <li>• entertainment (incl. mascots)</li> <li>• companionship</li> <li>• aesthetics</li> </ul>	'People domesticated the wolf. The descendants of domesticated wolves became dogs, which people later learned to use to help with hunting, for example. Dogs also helped keep wild animals at bay'. (History/Series A)
		
Negative instrumental value	Animals' value is based on the negative consequences they cause to humans or other nonhuman organisms or ecosystems	
Negative value for humans	Negative consequences caused by nonhuman animals to humans	'Why is it important to warn about a) an angry dog b) a moose? a) A dog can bite strangers. b) A moose collision can result in a serious accident'. (Social studies/Series B)
Negative value for non-human nature	Negative consequences caused by animals to other nonhuman organisms or ecosystems	'Many people think that there are already too many reindeer in Lapland. There is no longer enough lichen for them to eat, and overgrazing threatens to destroy Lapland's lichen forests'. (Environmental studies/Series B)
Intrinsic value	Animals are valuable in themselves, independently of the prospects for serving the ends or satisfying the needs or interests of others.	
Individual intrinsic value	Animals are valuable as sentient and unique individuals	'Some people stop eating meat altogether to respect animal rights'. (Religious education/Series A)
Holistic intrinsic value	Animals are valuable as representatives of unique or important ecological or systemic wholes (e.g. populations, species, families)	'Formica ants play an important role in the forest. They work the soil and recycle nutrients. The ants collect invertebrates to feed their larvae and are themselves food for many animals. The ants also disperse the seeds of plants, such as hepatica, to new locations'. (Environmental studies/Series B)
		

(Continued)

**Table 1.** Continued.

Worldview	Category description	Excerpt from data
Relational value	Value of reciprocal relationships between humans and nonhuman animals, which may be based on, for example, mutual care, animals' sacredness, or the relationship's significance to humans' good quality of life.	'Pets bring a lot of joy. However, pet owners also must commit to taking care of them. Pets need their owner's time. They need to be walked, fed, kept clean, and shown love'. (Religious education/Series A)

References: Brennan and Lo 2022; Deplazes-Zemp and Chapman 2021; Pascual et al. 2023; ten Have and Patrão Neves 2021; Verhoog, Lund, and Alrøe 2004.

'Excerpt from data.' The most expressions of value were included in the environmental studies textbooks (including teacher's guide and exercises) of textbook series B: grade 5 textbook contained 28% of all value expressions in the data, and grade 6 textbook and materials contained 17% of all value expressions. The least expressions of value were found in the social studies textbook for grades 5–6 of series A, and religious education textbook for grade 6 of series B, which both included less than 1% of value expressions in the data. A quantitative summary of the results is presented in Table 2.

### ***Expressions of different value categories in textbooks***

Intrinsic values of animals appeared in the data slightly more than instrumental values, with holistic intrinsic value more common than individual intrinsic value. Among instrumental values, provisioning and livelihood services were most frequent, followed by social and cultural services and supporting and regulating services. The proportions of each value category in the two textbook series are presented in Figure 1a,b.

The holistic intrinsic values were particularly related to the need to protect animals (species or other animal groups) from various threats such as overfishing, plastic waste, climate change, pollution, harsh winters, and deforestation. Individual intrinsic value emphasized animals' need for a good life and treatment.

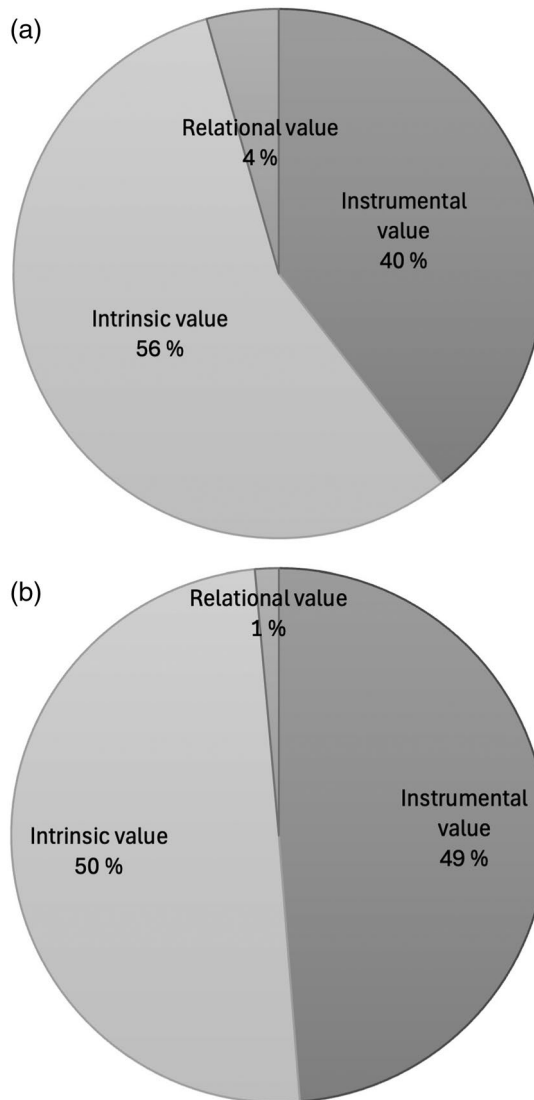
Provisioning and livelihood services emphasized animals mainly as food, but also as a source of income (e.g. wool, meat and leather products) and as property (live-stock). Social and cultural services mainly portrayed animals as labour (e.g. help in field work, herding animals, hunting), and as means of transportation, but also recreation (dog walking, fishing, and zoo visits). Supporting and regulating services highlighted animals' role in plant reproduction (e.g. pollination, seed dispersal).

Expressions of negative instrumental value were few and most emphasized the harm caused by animals to humans (garden pests, disease carriers, and traffic hazards by moose and deer). There were only a few mentions of animals' relational value; these concerned companion animals, animals as family members, and the sacredness of animals.

### ***Expressions of different worldviews in textbooks***

Non-anthropocentric worldviews were more common than anthropocentric worldviews, with ecocentric and zoocentric being the most frequent. Strong anthropocentrism

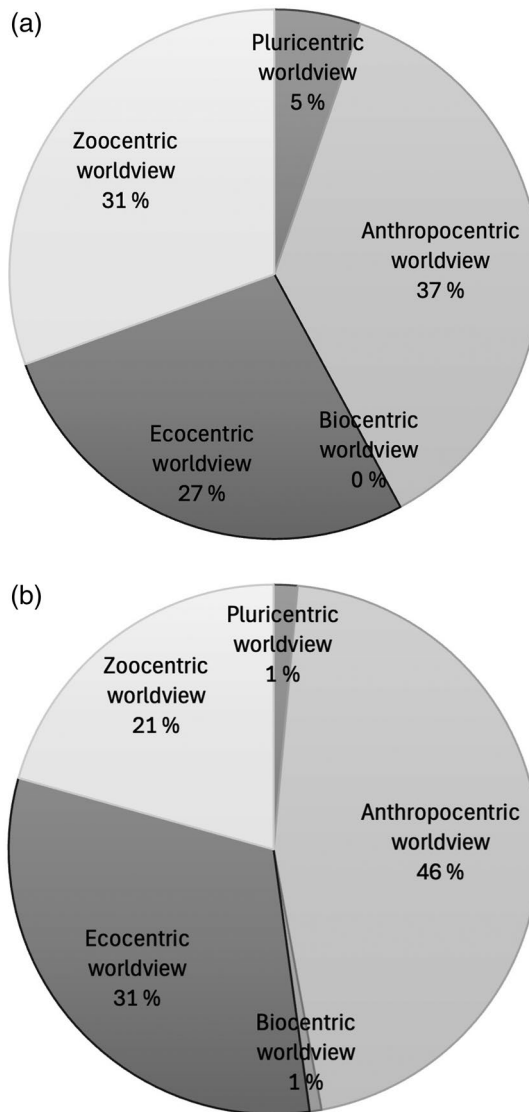




**Figure 1.** (a) The percentage of different value categories in textbook series A. (b) The percentage of different value categories in textbook series B.

dominated weak anthropocentrism. References to biocentric and pluricentric worldviews were very rare. The proportion of each worldview category in the two textbook series are presented in [Figure 2a,b](#).

Strong anthropocentrism positions humans above animals, and in the studied textbooks it was often associated with valuing animals as provisioning and livelihood services. Expressions of weak anthropocentrism, on the other hand, emphasized humans' dependence on animal services, such as pollination and labour services, and relationships with companion animals that benefit humans without exploitation. Weak anthropocentrism was often associated with animals as social and cultural services.

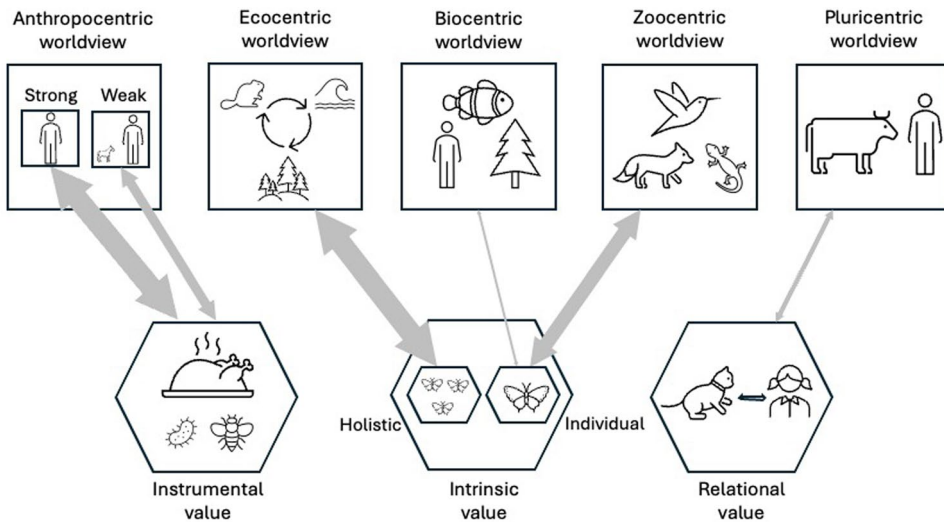


**Figure 2.** (a) The percentage of different worldview categories in textbook series A. (b) The percentage of different worldview categories in textbook series B.

Ecocentric worldviews mostly aligned with holistic intrinsic value, while zoocentric value was associated with individualistic intrinsic value. Biocentric mentions involved the idea that every living being was valuable, and pluricentric worldviews were associated with relational value. Connections between value and worldview categories are presented in [Figure 3](#).

### ***Differences between different subjects and textbook series***

There were clear differences between the studied subjects and the two textbook series in the values and worldviews expressed.



**Figure 3.** Connections between different value and worldview categories. The width of the arrows represents the approximate number of expressions.

### *History*

We selected expressions of values relevant to the present day but excluded expressions that had no connection to today's values (e.g. animals' value in the Middle Ages). Animals appeared frequently in history textbooks and exercises, especially in illustrations, but their explicit mentions were rare. Animals' main function seemed to be to assist human activities, such as labouring in the fields, or providing transportation. In textbook series A, value and worldview mentions were few and they emphasized social and cultural services and anthropocentrism. Textbook series B contained more value expressions and they emphasized social and cultural services, provisioning and livelihood services, and anthropocentric worldviews.

### *Social studies*

Social studies textbooks were considerably different; series A textbook contained only one expression of animals' value, whereas series B contained plenty of value expressions. Series B textbook highlighted animals' provisioning and livelihood services as well as social and cultural services. Animals' intrinsic, individual value was also elicited. Anthropocentrism was the most common worldview, but zoocentric worldview was also expressed.

### *Environmental studies*

In environmental studies, most animal mentions were fact-based descriptions of the animals' biological characteristics. However, environmental studies contained proportionately the most expressions of animals' value. Both textbook series emphasized provisioning and livelihood services and strong anthropocentric worldviews, but intrinsic holistic and individual values and ecocentric and zoocentric worldviews were also common. In textbook series B, holistic value and ecocentric perspectives were more prominent compared to textbook series A.

### **Religious education**

Religious education materials differed considerably. Textbook series A contained relatively many value expressions, focusing on intrinsic, individual value and a zoocentric worldview. Series B, on the other hand, contained few value expressions and none of the value or worldview categories was particularly emphasized.

### **Ethics**

Both ethics textbook series contained relatively many expressions of animals' value. In textbook series A, expressions of value were distributed across the categories, however intrinsic values slightly emphasized. These categories were also emphasized in textbook series B, as was the ecocentric worldview.

### **Discussion**

This study examined whether primary school textbooks in Finland include pluralistic ethical perspectives of animals and thus support cultural change towards sustainability transformation. Textbooks are a key research target when studying the values and worldviews conveyed by formal education, because as they concretize the curriculum and represent the knowledge and values on which the treatment of nonhuman animals and nature in society's policies and institutions is based.

This is the first study to examine the values and worldviews attached to nonhuman animals systematically across the textbooks of multiple school subjects. Our findings suggest that in general, the intrinsic value of animals as well as ecocentric and zoocentric worldviews are broadly present in Finnish textbooks for grades 5–6. On the other hand, the instrumental portrayal of animals, particularly as providers of provisioning and livelihood services, is very common. In this sense the textbooks provide the minimum basis for a pluralistic education that can enable incorporating the perspective and interests of animals and, more broadly, support of sustainability transformation through teaching. It is good to note that this study also has limitations: it does not consider all age groups or school subjects and focuses only on textbooks, leaving out, for example, the influence of teachers and school culture on the values and worldviews that are conveyed to students.

Somewhat surprisingly, the emphasis of Finnish textbooks and exercises is more non-anthropocentric compared to previous studies (Cho, Kim, and Stoltman 2022; Gola 2017; Gugssa, Aasetre, and Debele 2021; Mikander et al. 2024; Zahoor and Janjua 2020). However, our study did not examine culturally defined animal groups separately and it is possible that their treatment in textbooks is different. For example, according to Fonseca (2022, Fonseca and Vizachri 2023) and Folsche et al. (2025), in Portuguese and German textbooks animals used in production are discussed instrumentally, without interest in their agency or welfare. Instead, in the same textbooks the welfare of companion animals is considered valuable. A similar division and attitude has been found in Polish science textbooks by Gola (2017).

In a similar vein, Cho, Kim, and Stoltman (2022) discuss the role of animals in safari tourism in South Korean world geography textbooks for high school. According to the authors, 'wild animals are represented as both "preservation objects" with

ecological value and as “tourist objects” that provide economic development opportunities in the community’ (Cho, Kim, and Stoltman 2022, 59). Mikander et al. (2024) found that Finnish worldview education textbooks for grades 1–2 support the protection of domesticated and endangered animals but not caring for threatening animals.

It appears that also in our data, comparable worldview emphases for different culturally based animal groups may exist. Animals conceived as food (especially production animals, game animals and edible fish) seem to be presented mainly from an anthropocentric and instrumental perspective, while companion animals (especially dogs) are presented particularly from a zoocentric perspective, emphasizing their well-being. Urban species that city-dwelling people encounter in their everyday lives (e.g. urban gulls), are often presented from the zoocentric perspective as well. Endangered species seem to be described especially from an ecocentric perspective. Both domestic species and exotic, charismatic species (e.g. polar bears, elephants, Siberian tigers), are included in this group. However, having a more comprehensive picture of the relationship between cultural animal groups and the values attached to them in Finnish textbooks would require a separate study.

It is noteworthy that a very uncritical attitude towards animal-based food emerges from our data. Plant-based nutrition is not really discussed in the studied textbooks even though plant-based food is commonly recognized as a very important means of promoting not only animal rights but also general environmental sustainability and human health (Sabaté and Soret 2014; Rice 2017). This observation largely corresponds to Fonseca’s (2022, Fonseca and Vizachri 2023) findings regarding Portuguese textbooks, where recommendations to reduce the use of animal products for environmental, sustainability or human health reasons are very rare, animal production is presented favourably, and the agency or welfare of farm animals is not discussed. Saari (2021) points out that the consumption of cow’s milk has been supported in Finnish schools for decades both by the European Commission and various national campaigns. This situation will hopefully improve following the implementation of the revised national nutrition guidelines (National Nutrition Council and Finnish Institute for Health and Welfare 2024), which came into effect in late 2024. These guidelines advocate for a more plant-based diet and recommend a reduction in the consumption of animal-derived products. Fonseca has noted that regarding food, textbooks are more conservative than Portuguese teachers, who support addressing diverse diets and animal production as part of elementary school teaching (Fonseca 2023).

From the perspective of pluralistic education, we consider it problematic that relational values and pluricentric worldviews appeared very little in the learning materials. In relational and pluricentric valuing, human-animal relationships are seen as mutually beneficial, often reflecting people’s everyday experiences with animals, such as companion animals (Serpell 2017) and birds (Clark, Jones, and Reynolds 2019). Relational values may be important in promoting environmental and animal-friendly behaviours. Stronger emotional and experiential nature connectedness – which can be understood as an aspect of relational valuing – is associated with pro-environmental action in children (Chawla 2020). Jeong et al. (2021) suggest infusing relational thinking and the idea of the interrelatedness of human and nonhuman entities in science education. This would increase understanding of human role as an integral part of a

more-than-human ecological community, agency of humans and nonhumans as relationally entangled action, and human responsibility for these.

Another problematic finding is the general absence of ethical reflection from textbooks and that different subjects and textbook series emphasized different values and worldviews related to animals. The perspective was particularly one-sided in history textbooks, which contained many references and images related to animals, but gave animals very little agency. Humans were seen as detached from their environment, nonhuman animals and other species. Although the ‘animal turn’ is increasingly visible in humanities and social science, and Finnish social studies textbooks include perspectives related to animal welfare, history textbooks do not seem to have been affected by this turn, and they continue to be very anthropocentric (Domanska 2011).

Environmental science textbooks (together with ethics textbooks) offered a rather diverse range of value and worldview perspectives on nonhuman animals. This may be explained by the strong emphasis of Finnish environmental studies on environmental sustainability, environmental awareness and environmental sensitivity in the National Curriculum (Finnish National Agency for Education [FNAE] 2025). However, their lack of ethical reflection can hinder students from understanding that sustainability and the status of animals are value-based issues, and solving crises like biodiversity loss, climate change or animal exploitation is likely to require conscious and considered ethical reflections as well as changes in worldviews (Anderson et al. 2022; Lindgren and Öhman 2019).

The starting point of this study is the presumption that a pluralistic education is a sensible approach in promoting transformative social and cultural change for sustainability. However, we recognize that the pluralistic approach is not a straightforward response to the environmental crisis, given its seriousness and urgency. Tryggvason et al. (2023) highlight the tension between the urgency of the crisis, the effect of it on (young) people’s well-being, and pluralism’s deliberative ideals (Tryggvason et al. 2023, 1462–1463). Kopnina (2014, 2022) critiques pluralism for prioritizing social and economic aspects over ecological ones, potentially reinforcing anthropocentric agendas. This raises the question of whether education should more critically challenge value structures that lead to oppressive social practices (Pedersen 2010).

Tryggvason and colleagues (Tryggvason et al. 2023) see that one solution is to critically consider the problem of relativism and the limits of pluralism, i.e. aim to determine which moral perspectives should be considered legitimate in a pluralistic education. Ecofeminist and critical animal studies argue for an active renegotiation of human’s place in the often unequal human-animal relations. Furthermore, it is important to make the value of animals visible not only as an ethical but also as a political, economic and cultural issue that affects all of us in our everyday lives.

## Conclusions and recommendations for textbook development

Education and the language used in textbooks can either normalize the exploitation of nonhuman animals and ecologically unsustainable lifestyles or question it (Spanning 2017; Kopnina 2022). The aim of this research was to see if 5–6 grade textbooks in

Finland include a plurality of ethical perspectives that can provide the basis for incorporating the perspective and interests of animals in education and enable cultural worldview transformation that supports sustainability. Textbooks that portray animals not only through anthropocentric perspectives but also from non-anthropocentric perspectives, can serve as a basis for helping students see and question dominant worldviews and those contemporary lifestyles that rely on the unsustainable exploitation of animals for human purposes—practices that are both ethically problematic and ecologically unsustainable. Based on the findings of this study, we present three recommendations for developing school textbooks according to this idea.

### 1. Treating all animal groups from a pluralistic perspective

A pluralistic approach should be applied to all cultural animal groups and extend to animals used in production, whose perspective is neglected in textbooks (Fonseca and Vizachri 2023; Folsche et al. 2025). Discussing the politics and conflicts of interest related to eating meat, as well as utilization of other animal-based products, is a topic that touches students' everyday lives. However, animal-based food is normalized, and food choices are trivialized as an ethical issue.

Childhood is a period when questions of ethical consumption begin to be questioned (Folsche et al. 2025). As the provisioning and livelihood services category (animals as food or source of skins/wool/honey, animals in entertainment or recreation, or animal experiments or other medical uses) appeared in almost all textbooks we studied, the status, interests, and utilization of animals can be critically discussed from ethical, political and economic perspectives in basically any school subject.

We recognize that different cultural and religious perspectives and identity politics related to food challenge textbook writers and teachers. However, as Jeong et al. (2021) note, science education can no longer be considered apolitical, because ecological challenges require that the division of humans and 'nature', the fundamental paradigm of science, is questioned. Meat consumption and animal production can provide a rich subject area for pluralistic examination and an opportunity to critically evaluate and respectfully discuss different values and worldviews, while increasing students' normative competence to act in a globalized world (Rudsberg and Öhman 2018; Spannring 2017). Animal ethics could be introduced in Finland already in primary school, unlike currently, when it is only properly addressed in upper secondary school and high school, as Saari (2021) notes.

### 2. Increasing and diversifying relational perspectives

Relational values and pluricentric worldviews were very few in Finnish textbooks and they were mostly related to human-companion animal relationships. Relational values of reciprocity, care, responsibility and interconnectedness with nature are known to resonate within and across various societal groups of people in their everyday lives, which is why broader introduction of relational perspectives in textbooks would be useful (Anderson et al. 2022). Relational value can be found, for example, in a person's relationship with an animal that is important to them, which they want to take care of, and which may be

significant to their identity. This could be, e.g. a companion animal or a wild animal that they often encounter in their everyday life. Such a reciprocal relationship often produces well-being for both parties (for example, the animal benefits from the person's desire to protect it). Research has indicated that relational values, such as experiencing nature as an equal partner, may be associated with more environmentally friendly behaviour (Chan et al. 2016, Braitto et al. 2017).

Many examples of relational approaches can already be found in ESE, including those focusing on systems thinking, connections and harmonious relationships between humans and nature, and ideals of kinship and care (dos Santos and Gould 2018). Arts-based approaches can be particularly useful in supporting relational understanding as they are able to activate embodied and emotional aspects of learning, thus supporting meaning-making, engagement, and care related to complex environmental issues (Galafassi et al. 2018).

It is however important to recognize that relational values contain the potential for misuse, as they can also be used to justify harmful actions such as exploiting nature and animals for the sake of human-nature relationships. An example is the use of animals for experiential or recreational purposes, such as dolphin swimming, zoo visits or hunting, which mainly benefit humans.

### 3. Comprehensive integration of values and worldviews into different school subjects

The discrepancy of value and worldview perspectives within the same publisher's textbooks is contrary to the basic principles of environmental learning, i.e. holistic and cross-cutting approach (e.g. Borg et al. 2012). While it is good that value perspectives are varied, different values and worldviews should be comprehensively represented in all textbooks. A situation where textbooks for different subjects emphasize very different values and there is no integration between subjects can confuse students rather than help them construct a comprehensive picture of the topic.

The value differences in different textbooks and publishers presumably reflect both editorial decisions of the publishing house, and the possibility of textbook authors to personally influence the textbook style and perspectives within the limits set by the National Curriculum. A more comprehensive integration of values and worldviews across subjects would thus probably require more discussion within publishing houses and among textbook authors. The need for such a discussion is likely to increase in the future, as we believe that environmental and sustainability issues will increasingly be included in other than scientific subjects in the future. Animals appear very little in European curricula (Lindgren and Öhman 2019) and it would be very important to take them into account more widely in curricula reform processes.

## Notes

1. For the sake of readability, we use the terms 'animal' and 'nonhuman animal' interchangeably to refer to animals other than humans. In a similar vein, we have chosen to use the terms 'nature' or 'nonhuman nature'. We are aware of the criticism regarding the

ambiguousness of these terms and the nature-culture and human-nature division they may suggest. Other researchers have addressed this problem using terms including, e.g. 'nonhuman world' and 'more-than-human world' (see Folsche et al. 2025; Taylor and Twine 2014).

2. *Provisioning services* include services such as food, water, timber, and fiber; *regulating services* refer to services that affect climate, floods, disease, wastes, and water quality; *cultural services* mean services that provide recreational, aesthetic, and spiritual benefits; and *supporting services* refer to services such as soil formation, photosynthesis, and nutrient cycling (Reid et al. 2005, V).
3. According to Deplazes-Zemp and Chapman (2021), relational value refers to a relationship between a valuing subject (A) and an object of value (B) that 'contains the appreciation of a contribution of B to A's well-being (instrumental valuing aspect) as well as esteem for the valued object B for its own sake, associated with a sense of responsibility for this object (intrinsic valuing aspect)' (Deplazes-Zemp and Chapman, 2021, 690).

Several researchers have criticized the definition of relational values as a third value category alongside intrinsic and instrumental values. For instance, Luque-Lora (2023) questions the conceptual and pragmatic worth of the separate category of relational values by arguing that relationality is inherent in the existing categories of intrinsic, instrumental and held values. Stålhammar and Thoren (2019) argue that relational values cannot be considered as a new value category but can be useful as an epistemological framing tool. They claim that the problems with relational values have to do with problems in the theory of ecosystem services in which intrinsic and instrumental values are understood very narrowly (Stålhammar and Thoren 2019).

In this article, we do not take a position on the ontology of relational values, i.e. whether they actually exist as a separate value category. Instead, we treat relational values as a concept that is practically useful for educational purposes in describing what kinds of values people can attach to nature. We understand relational value to be based on a human-animal relationship that presumably benefits both parties simultaneously, depicting genuine esteem and care. We distinguish relational values from social or cultural services in the sense that the latter primarily benefit people.

## Acknowledgments

We want to express our gratitude to Mikko Puumala, Elisa Aaltola and Panu Pihkala for their help with and valuable comments on the research plan and manuscript. We also thank the anonymous reviewers for their constructive feedback and insightful suggestions.

The AI software Microsoft 365 Copilot has been used to improve the grammar and fluency of the manuscript text.

## Authors contributions

Authors involved in the conception and design of the article: Henna Rouhiainen. Authors involved in the analysis and interpretation of the data: Henna Rouhiainen and Jenna Aarnio. Authors involved in the drafting of the paper: Henna Rouhiainen and Jenna Aarnio. Authors involved in the revising it critically for intellectual content: Henna Rouhiainen and Jenna Aarnio. Authors involved in the final approval of the version to be published: Henna Rouhiainen and Jenna Aarnio. All authors agree to be accountable for all aspects of the work.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Funding

Both authors received funding for conducting the research from Kone Foundation under grant [number 202406742].

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