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Anthropomorphizing Nature as a Tool for Environmental Education. Opinions of Pedagogy Students in the Context of Represented Environmental Ethics

Antropomorfizacja przyrody jako narzędzie edukacji ekologicznej.
Opinie studentów pedagogiki w kontekście reprezentowanej etyki środowiskowej

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Abstract: The purpose of the study was to check pedagogy students' opinions on using anthropomorphizing nature for the development of pro-environmental knowledge and behaviour in the context of their own environmental ethics orientations. An online survey for university pedagogy students from Poznan, Poland, was conducted. N=221 respondents, of whom 97% were women, filled out the questionnaires. Descriptive statistics were used for closed questions on students' opinions about using anthropomorphizing nature for environmental education. To find out the respondents' environmental ethics orientations, content analysis of answers to open questions was used, applying theory-based categories of environmental orientations derived from environmental ethics (anthropocentrism, biocentrism). The findings revealed that the majority of students believe that anthropomorphism of nature helps in the development of pro-environmental behaviour (62.4%) and knowledge (55.8%). In justification, most (63.8%) presented anthropocentric attitudes; 27.5% of answers were biocentric, and 8.8% – mixed eclectic. According to the other questions the respondents supported biocentric environmental norms. Their justifications, however, again revealed mostly anthropocentric motivations 63.2%. Conclusion: Pedagogy students, although they support biocentric norms, believe that anthropomorphism of nature will be the right tool for environmental education, and use anthropocentric arguments in their justifications. In their future pedagogical practice, they will rather develop anthropocentric orientations in children, building positive attitudes towards nature on (false) belief in similarities of human and non-human living organisms, instead of recognition of their "otherness" and intrinsic value.

Keywords: environmental education, the anthropomorphism of nature, environmental ethics, pedagogy students

Streszczenie: Celem badania było sprawdzenie opinii studentów pedagogiki na temat wykorzystania antropomorfizacji przyrody do rozwijania wiedzy i zachowań proekologicznych w kontekście ich własnych orientacji w zakresie etyki środowiskowej. Jako metodę zbierania materiału, wykorzystano ankietę on-line. Próbkę badawczą stanowiło N=221 studentek i studentów pedagogiki z Poznania (Polska), z czego 97% stanowiły kobiety. Opinie studentów na temat wykorzystania antropomorfizmu przyrody w edukacji ekologicznej analizowano za pomocą statystyk opisowych. Aby poznać orientacje respondentów w zakresie etyki środowiskowej, zastosowano analizę treści; analizowanymi tekstami były odpowiedzi na pytania otwarte. Klucz do analizy zbudowano w oparciu o kategorie etyki środowiskowej i zastosowano z góry narzucone, wyprowadzone z teorii kategorie analizy (antropocentryzm, biocentryzm). Wyniki pokazały, że w opinii większości respondentów, antropomorfizacja przyrody pomaga w rozwoju zachowań proekologicznych (62,4%)

i wiedzy (55,8%). W odpowiedziach na pytania otwarte, większość (63,8%) prezentowała postawy antropocentryczne; 27,5% odpowiedzi było biocentrycznych, a 8,8% – mieszanych eklektycznych. Na poziomie deklaracji, respondenci popierali biocentryczne normy środowiskowe; ich uzasadnienia okazały jednak w większości antropocentryczne (63,2%). Wnioski: Studenci pedagogiki, choć popierają normy biocentryczne, uważają, że antropomorfizacja przyrody będzie właściwym narzędziem edukacji ekologicznej, a w swoich uzasadnieniach używają argumentów antropocentrycznych. W swojej przyszłej praktyce pedagogicznej będą raczej rozwijać u dzieci orientacje antropocentryczne, budując pozytywne postawy wobec przyrody na (fałszywej) wierze w podobieństwa ludzkich i pozaludzkich organizmów żywych, zamiast uznawać ich "inność" i wewnętrzną wartość.

Słowa kluczowe: edukacja ekologiczna, antropomorfizacja przyrody, etyka środowiskowa, studenci pedagogiki

Introduction

In the history of humanity, the human-nature relation has been based on the utilitarian value of nature and the dominant position of humans, the highest species in the hierarchy. The environmental crisis made humans' dependency on nature more visible, which accelerated the development and change of the dominant environmental paradigm. However, it took time until the risk of the environmental catastrophe was noticed. As late as in the second half of the 20th century the groundbreaking *Silent Spring* in 1962 (Carson 2002) and the Club of Rome's *The Limits to Growth* in 1972 (Meadows, Randers and Meadows 1972) helped to understand the necessity of revising humans' attitudes toward nature if humanity would survive.

In the 70-ties the 20th century, the idea of a new environmental paradigm, based on new environmental ethics, started to arise in social science and humanities (Dunlap and Liere 2008; Attfield 2018). In contrast to shallow ecology, the concept of deep ecology fundamentally changed human thinking about nature and the environment, postulating biospheric egalitarianism and looking for the long-term planetary good of all species, instead of only human interests in a short perspective (Naess 1973). The belief that all species have equal entitlement to live their way was supported also by Albert Schweitzer (Schweitzer 1974).

Changing environmental ethics orientation from an anthropocentric to a biocentric

one, however, is not easy. It is a long process that needs to include development of conscious respect for life in all its forms, as a fundament of human system of values. Education might be an effective tool in driving environmental worldviews to biocentric positions, and competent teachers, with high environmental awareness rooted in deep, not shallow ecology, might serve as agents of this change. However, taking into account that most environmental education curricula globally are based on the anthropocentric fundament (Reid 2018), the biocentric revolution has little chance of being realized. An exception may be alternative strands of environmental pedagogy, such as just emerging in Poland, pedagogy of the forest. Many of the cocreators of this strand, such as Paluch (2022), Śliwerski (2022), Rykowski (2022), Chutorański 2022, and Klimski (2014), recognize biocentrism as a core value in environmental pedagogy.

1. Key concepts and purpose of the work

1.1. Anthropomorphism of nature

Children's empathy and compassion toward nature, and their belief in the equality of all species, are achieved in environmental education using the anthropomorphism of nature as a pedagogical tool. A lot of children's plays are based on playing roles, also of non-human organisms, who feel, speak, and behave like humans. This is what anthropomorphism means: it is a phenomenon based on attributing to animals,

plants, and even non-living and non-existing objects, human traits, and properties which reflects looking in them for psychological processes similar to those which take place in humans (Sławiński 2000). As a literary tool, anthropomorphism is close to but different from personification. Unlike the latter, however, the former attributes only a human trait or motive, humanizing chosen aspects of the object, without imposing on that object a human form or cancelling its belonging to a particular taxonomic group (Karwacka 2016).

In studies on anthropomorphism, two opposite approaches are observed: positive and negative. According to the positive approach, anthropomorphism is perceived as a valuable tool for developing biocentric environmental awareness, as is presented in Frans de Waal's *Mamma's Last Hug* (De Waal 2019); in the negative approach, anthropomorphism appears as a threat to biocentric environmental awareness (Wynne 2004). The criticism refers, among others, to a sentimental projection of human emotions on observed non-human animals, which spoils the chance to see them as they are, as different creatures (Białek 2022). Sentimental anthropomorphism shoves observed non-human animals into human forms, and people stop to see the differences between non-human animals and humans; sentimental interpretations block objective views. However, as Białek notices, the perspective is changing: "Although, until recently, it was difficult to hear from animal researchers more serious critics than 'anthropomorphism,' the situation is changing and young researchers present the view, that anthropomorphism while observing non-human animals is often helpful and to some extent, indispensable" (Białek 2022).

1.2. Anthropomorphism and anthropocentrism

A systematic review by Williams, Whitmarsh, and Mac Giolla Chríost (2021) of 25 highest-quality studies on the association between anthropomorphism and social environmental attitudes or behaviours showed, that in

most studies, anthropomorphism or mind attribution to nature/animals brought positive outcomes in respect of environmental attitudes and behaviour. Belief in the animal mind was positively correlated with affection towards species, moral concern enhancing intention to be vegan or vegetarian, and disagreement to animal cruelty, using animals in experimentation or even for educational purposes in the classroom. Anthropomorphism was also positively correlated with a better understanding of the environmental crisis, action efficacy, and ecological behaviour, including support for environmental organizations and actions. It positively influenced pro-environmental behaviour intentions. In only 1 study, on recreational fishing, anthropomorphizing animals did not change respondents' attitudes toward fishing. The review proved that anthropomorphism increases empathy, connectedness to nature, as well as pro-environmental attitudes and behaviour (Williams, Whitmarsh, and Mac Giolla Chríost 2021).

The findings reported by the above authors were confirmed in several other studies. They proved that anthropomorphizing nature in green advertisement increases the effectiveness of ads (Laksmidewi and Soelasih 2019). In another experimental study, anthropomorphism of nature, development of eco-centric orientation, and progress of morality in 7 years old preschool children were observed (Lithoxidou et al. 2017). Stronger connectedness with nature, greater empathy, and the feeling of guilt towards nature as a result of anthropomorphism were reported also by the works of Tam and coauthors (Tam 2013; 2019; Tam, Lee, and Chao 2013; Tam 2014; 2015). On the other hand, Kingston (2016) notices that attitudes are not always manifested in behaviours and turns attention to the importance of values for environmental behaviour. The author shows that various classifications and typologies of values form 2 broad categories or motivational clusters: biocentric and anthropocentric. The biocentric category sees the value of e.g., bats,

as intrinsic, which does not need additional justification. Anthropocentric values are based on economic justification of the “usefulness” of bats (ecosystem services provided by bats), which might be cancelled by fear, pejorative myths, or tradition. Kingston recommends avoiding framing messages in conservation education that appeal to anthropocentric-based values and advises against using anthropomorphism for building empathy and esteem towards nature (Kingston 2016).

However, there are also negative judgments on anthropomorphism which are based on 3 pillars: the role of common sense and intuition in the scientific image of the world; animal rights and anti-speciesism; the use of humans as models in scientific explanation (Bruni, Perconti, and Plebe 2018). The first is a kind of projection of human traits, mainly psychological, such as feelings, emotions, on other entities. The second is trying to “understand” animals or plants through the filter of human experience, which was long perceived by ethology scientists as a “cardinal sin” (Broadhurst 1963), in (Bruni, Perconti, and Plebe 2018). From that perspective, empathy based on human experience rather than biological knowledge about species is also unscientific and wrong. On the other hand, speciesism is based on rejecting the genuine features (and intrinsic value) of non-human animals which are perceived only as humans. Hence, animal rights activists and enemies do not accept anthropomorphism, although it helped a lot in developing some fields of animal behaviour research and plays a positive role in caring for cats, dogs, and other pets people keep at home (Bruni, Perconti, and Plebe 2018). A similar view on the benefits of the critical use of anthropomorphism in animal studies is presented by Karlsson (2012), who characterizes the relations between anthropomorphism and anthropocentrism, indicating, that anthropomorphism, although it comes from the anthropocentric way of thinking positions, may under some conditions lead to biocentric

norms e.g. of equality of human and non-human animals (Karlsson 2012).

Detrimental effects of anthropomorphism have been proved on domestic animals (Mota-Rojas et al. 2021). A strict negative position on anthropomorphism is also taken by Daston (1995), in her essay on the 17th century evolution of understanding and usage of anthropomorphism. “Anthropomorphism means to describe the nonhuman in human terms, and it was a cardinal religious sin long before it became a cardinal scientific sin” writes Daston (1995, 38). The paradox is both religion and science’s rejection of anthropomorphism was caused by extreme anthropocentrism. As Daston notices: “We are against anthropomorphism because we are against anthropocentrism; they were against anthropomorphism because they were pro anthropocentrism.” The Author explains, that in the 17th century, in the opinion of proponents of anthropomorphism, “it was an error to credit soulless animals even with pain, much less with human emotions and thoughts; those same convictions robbed nature of her whimsy, plastic powers, and autonomy” (Daston 1995, 39).

Most of the works cited above come from fields such as biology, psychology, and philosophy; there is a need for research on anthropomorphizing nature that directly relates to education, particularly to environmental education. This article is a step towards bridging this gap.

1.3. Research purpose and research questions

The purpose of the study is to identify pedagogy students’ views on anthropomorphizing nature as a pedagogical practice in environmental education, as well as students’ environmental ethics orientations.

Hence, our research questions are as follows:

1. What are pedagogy students’ views on the usefulness of anthropomorphizing nature in developing environmental knowledge and behaviour?

2. What are students' environmental ethics orientations?

2. Material and methods

The study's methodology was conceptualized based on academic handbooks on research methods in education (Cohen, Manion, and Morrison 2011; Rubacha 2012). A convenience sample of 221 pedagogy students, aged 20-21, 215 women (97%), 5 men (2%), and one non-binary (0.04%), was covered by the study. The online survey hosted by MS Forms App, including closed and open questions was used as a method of gathering material. The data gathered were transferred to Excel for tabulation and graphic illustration of the data. The questionnaire was built for several environmental education research and consisted of 52 questions. For this study, 5 of them were included: 32, 33, 34, 35, 7, 36, 37, 42 (Tab. 1). The question 7 was derived from New Ecological Paradigm

Scale (NEP Scale), revised version (Dunlap et al. 2000).

For the closed questions, descriptive statistics were used to illustrate the distribution of answers. For the open ones, content analysis was conducted. The categorization key included two theory-based broad categories of environmental ethics: anthropocentric and biocentric. The conceptualization of categories was compiled based on Trempała's Ph.D. thesis on environmental awareness (Trempała 2016) and Beata Gola's habilitation work on environmental ethics (Gola 2018a), complemented with own elaboration of keywords for each of the categories (Tab. 2). During the process of categorizing the content, the third category emerged for eclectic answers, which included, incoherently, both anthropocentric and biocentric justifications. We called this category as "mixed".

Table 1. Online survey questions were included in the study

Nb	Question	N	Analysis
32	Do you agree with the statement that anthropomorphizing nature helps in promoting pro-environmental behaviour? (Likert scale)	217	Descriptive statistics
33	Justify your answer to Q. 32 (open question)	159	Content analysis
34	Do you agree with the statement that anthropomorphizing nature helps in developing knowledge about nature? (Likert scale)	217	Descriptive statistics
35	Justify your answer to Q. 34 (open question)	145	Content analysis
7	To what extent do you agree with the statement: "Plants and animals have as much right as humans to exist" (Likert scale)	217	Descriptive statistics
36	Do you think that trees should have rights similar to human rights or animal rights? (Likert scale)	217	Descriptive statistics
37	Justify your answer to Q. 36 (open question)	150	Content analysis
42	Do you agree that people who cruelly treat animals should be imprisoned?	216	Descriptive statistics

Source: own elaboration; q. 7 derived from New Environmental Paradigm Scale (Dunlap et al. 2000)

Table 2. Categorization key for content analysis. Part 1: anthropocentric environmental orientation

	Sub-categories' characteristics	Codes
Hierarchy of beings	Domination of humans; (u) privileged position of humans who stay in alliance with nature;	
The moral status of beings	Only humans are the subject of morality as they have intelligence, consciousness, and self-consciousness; humans have moral obligations only toward other people; (2) humans are the only moral subject and the carer of nature	Care (to take care of nature, care for nature)
Attitude toward science and technology	Technological optimism and triumphalism; (2) technological prudence	Protection (to protect) Help (to help)
Vision of growth	Maximization of economic growth, prosperity, and consumption; replacing nature with substitutes; respecting the values of sustainable development in all its dimensions; promotion of green technology and infrastructure; stabilization of human population growth; reconciliation of politics of growth with ecology; reduction of excessive consumption	Feel sorry for nature To pity nature; usefulness of nature; a utilitarian value of nature; utilitarianism; to protect what nature gives us, humans; the language of benefits, e.g., ecosystem services.
Attitude towards the environment	The dependence of human activities in the environment on their benefits for them; polluted environment as a threat to humans; natural environment protection as protection of humans; humans are carers of nature; the relative value of nature; blindness for the intrinsic value of nature; utilitarian attitude to nature	

Source: Compilation based on Trempała's conceptualization of environmental attitudes summarised in Tables 1, 2, 3 (Trempała 2016, 99-101), Gola's characteristics of anthropocentric and biocentric ethics (Gola 2018a, 245), and own set of keywords.

Table 3. Categorization key for content analysis. Part 2: biocentric environmental orientation

	Sub-categories' characteristics	Codes
Hierarchy of beings	Biotic equality	
The moral status of beings	The whole of nature constructs the moral universe, has intrinsic value	
Attitude toward science and technology	Technological catastrophism,	
Vision of growth	Abandoning economic growth; reducing consumption to the basic needs; spiritual development; abandoning the dominant paradigms of scientific-technological progress; turning to alternative technologies; maximum possible non-interference in the natural world	Empathy; compassion (towards nature); equality (of all beings); other beings' value; intrinsic value; for the Planet/ecosystems good.
Attitude towards the environment	The right of all Wrong for non-human living is that which is detrimental to their life and development; beings to live for their own sake; each organism realizes its own good according to its way; protection of the welfare of living organisms for their own sake; interdependence of organisms in natural ecosystems	

Source: Compilation based on Trempała's conceptualization of environmental attitudes summarised in Tables 1, 2, 3 (Trempała 2016, 99-101), Gola's characteristics of anthropocentric and biocentric ethics (Gola 2018a, 245), and own elaboration of keywords.

3. Findings

3.1. What are pedagogy students' views on the usefulness of anthropomorphizing nature in developing environmental behaviour?

To the first question: "Do you agree with the statement that anthropomorphizing nature helps in promoting pro-environmental behaviour?" most respondents (62.4%) said "yes"; 29% strongly agreed and 36.4% rather agreed (Fig. 1). One-third of respondents did not have an opinion (32.3%); almost none of them disagreed (2.3% answers "rather disagree"). The findings show that students perceive anthropomorphism of nature as a useful tool for education of pro-environmental behaviour. As a justification, students emphasize the positive influence of anthropomorphism for empathy, compassion, and understanding that nature consists of living organisms, which may also feel pain, and which should be protected and not treated with cruelty.

3.2. What are pedagogy students' views on the usefulness of anthropomorphizing nature in developing environmental knowledge?

To the question "Do you agree with the statement that anthropomorphizing nature helps in developing knowledge about nature?"; more than half (55.8%) said yes. Over one-third (36.4%) did not have an opinion and

almost 8% disagreed (Fig. 2). The belief that anthropomorphizing nature is a useful tool for development of environmental knowledge is weaker than that for environmental behaviour, but still quite popular.

3.3. What are students' own environmental ethics orientations?

To answer this research question, two closed and two open questions from an online survey were used.

3.3.1. Closed questions

The 7th item from the revised NEP Scale (Dunlap et al. 2000): "Plants and animals have as much right as humans to exist", received a highly positive response: 93% of respondents agreed with the statement, including 78.3% who agreed strongly (Fig. 3). Only 5.1% did not have an opinion on this matter and only 1.4% chose "rather disagree". Nobody strongly disagreed. This result shows a high level of respect for life itself, even affirmation of life characteristics of biocentric ethics orientation.

Similarly clear answers were obtained as regards the question on animal cruelty. As much as 97.3% of respondents agreed that people who treated animals with cruelty should be imprisoned. Only 2.8% of respondents did not have an opinion and nobody disagreed.

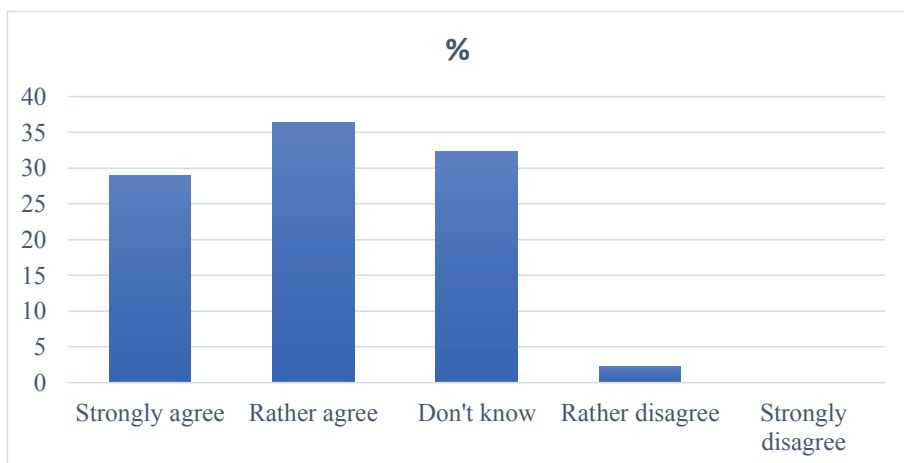


Figure 1. Distribution of answers to the question: "Do you agree with the statement that anthropomorphizing nature helps in promoting pro-environmental behaviour?"

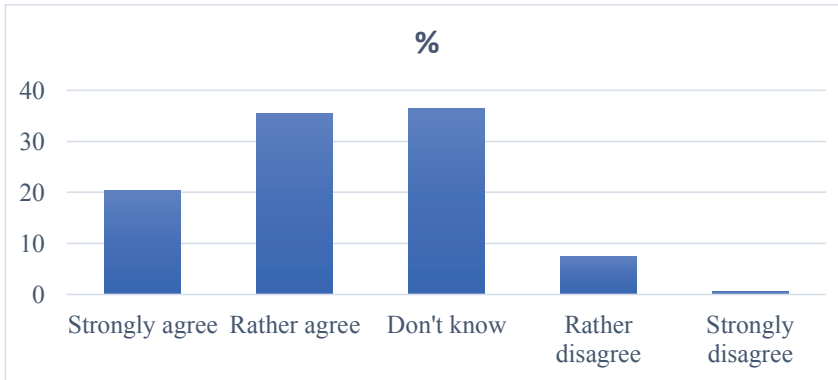


Figure 2. Distribution of answers to the question: "Do you agree with the statement that anthropomorphizing nature helps in developing knowledge about nature?"

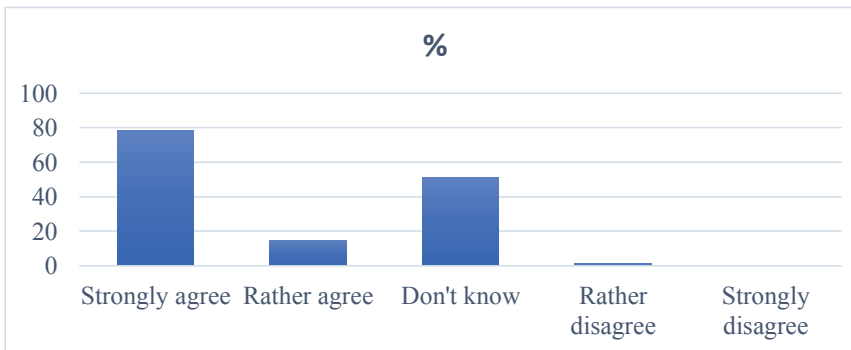


Figure 3. Distribution of answers for the question "Plants and animals have as much right as humans to exist", which is item number 7 from the NEP Scale

Affirmation of life and non-tolerance towards animal cruelty goes in line with empathy toward trees. Just over 50% of respondents believe, that trees should have rights similar to human rights or animal rights. Almost 20% strongly agreed with such a statement and almost 31% rather agreed. Similarly, to previous questions, over one-third (35%) did not have an opinion on that matter, and more than in previous questions – 14.3%, disagreed (Fig.4).

3.3.2. Open questions

Open questions' answers were used as texts for content analysis. Most (31.1%) of the answers on using anthropomorphism for the development of environmental behaviour, were anthropocentric in character (Tab. 4). For example:

"[Anthropomorphism] makes plants and animals similar to humans and the more they are similar to us, the more care we will give them". Almost half of the responses (49.7%) were irrelevant or unable to classify to environmental ethics category, e.g. "Such slogans are easier to pay attention to." Only 13.8% of answers were biocentric, e.g., "...because it allows one to identify with nature and treat it as equal to humans", or "I believe that everything has a soul". About 4.4% of answers were mixed, e.g. "I believe that many people, despite education, do not realize that everything around us is alive (*biocentric*), often feels (*biocentric*), languishing when not cared for (*anthropocentric*), it helps to realize and in a simple way to convey to 'resistant' people what we have to deal with when we hurt our surroundings daily (*biocentric*).

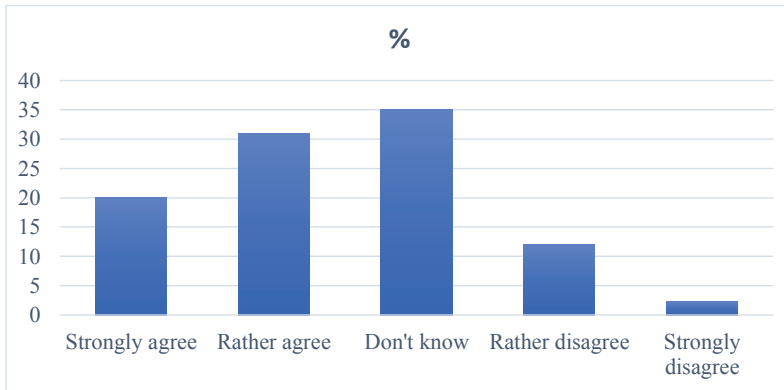


Figure 4. Distribution of answers to the question: “Do you think that trees should have rights similar to human rights or animal rights?”

Table 4. Content analysis results for open questions

Categories of analysis - attitudes' orientations	Open questions	
	Justification to Q32 (anthropomorphism and environmental behavior)	Justification to Q36 (trees' rights)
	N (%)	N (%)
Anthropocentric	51 (32.1)	60 (40)
Biocentric	22 (13.8)	28 (18.7)
Mixed	7 (4.4)	7 (4.7)
Irrelevant / Unable to classify	79 (49.7)	55 (36.7)
Total	159 (100)	150 (100)

Source: Own elaboration.

Table 5. Content analysis results for open questions. Respondents' environmental ethics orientations

Categories of analysis - environmental ethics orientations	Open questions	
	Justification to Q32 (anthropomorphism and environmental behavior)	Justification to Q36 (trees' rights)
	(%)	(%)
Anthropocentric	63.8	63.2
Biocentric	27.5	29.5
Mixed	8.8	7.4
Total	100	100

Source: Own elaboration.

Excluding irrelevant and unable-to-classify answers, the proportions of anthropocentric/biocentric/mixed answers is 63.8/ 27.5/ 8.8 (Tab. 5).

In justification for the answers about “Trees should have rights similar to animals’

rights”, 40% of responses were anthropocentric (Tab. 2), for example, “The tree develops all the time and influences the improvement of people’s lives so it should be taken care of”. Over twice less 18.7% of answers were biocentric, e.g., “[Trees] are also inhabitants

of the Earth”, or “I don’t quite perceive a tree as ‘something’ that should have its rights; only as a free-standing plant”. Almost 40% were irrelevant or impossible to classify and 4.7% were mixed, e.g. “Trees should not be cut down under any pretext that they are old, too tall or crooked (*biocentric*), if they do not threaten the lives of others (*biocentric*) or are not diseased and there is a risk of disease to other trees (*anthropocentric*) then they should grow in peace (*biocentric*)”. Excluding irrelevant and unclassifiable answers, the proportions of anthropocentric/biocentric/mixed answers are 63.2/29.5/ 7.4 (Tab. 5).

4. Discussion

The purpose of the study was to identify pedagogy students’ views on the anthropomorphism of nature as a pedagogical practice in environmental education, as well as students’ environmental ethics orientations. The results showed that pedagogy students positively perceive anthropomorphism as a tool for environmental education, believing it to be effective both in promoting environmental behaviour (62.4% of yes responses) and natural knowledge (55.8% yes).

According to environmental ethics, the respondents display biocentric beliefs. As many as 93% of them supported the thesis that plants and animals have the same rights to life as humans; 97.3% were in favour of severely punishing people who mistreat animals; slightly more than 50% supported the thesis that trees should have rights analogous to animal or human rights. At the same time, in justifying their answers, the majority (64% for question 32 and 63% for question 36) showed an anthropocentric orientation of environmental ethics. This peculiar paradox, in which anthropomorphism leads to biocentric norms motivated by anthropocentric values, can be explained by the peculiarities of environmental education in Poland, both in terms of formal education and teacher training.

As shown in studies of the core curriculum in Poland (Kozłowska 2021a; 2021b; 2021c; Gola 2016; 2018a; 2018b; 2022) and styles of teaching (Czapla 2003; Czapla and Berlińska 2011; Czapla and Rataszewska 2019), environmental education in primary school is inconsistent and above all, built on a strong anthropocentric foundation. Typical lesson topics include questions like “What does the forest give us?” (Winiecka-Nowak 2022, 18); “What is the importance of angiosperm plants for humans?” (Sęktas and Stawarz 2018, 149); or topics as: “Identifying mushrooms (edible, poisonous)” (zdo-bywcywiedzy.pl n.d.).

The anthropocentric orientation of Polish environmental education is not an exception in the world – rather, it is a global rule that researchers of curriculum studies are calling for to be changed (Reid 2018, 14). It is worth noting that the highest standard of pro-environmental development policy and strategy – sustainable development – is by definition anthropocentric since it justifies the need to protect nature with human survival. In the famous report *Our Common Future*, prepared in 1987 for the World Commission on Environment and Development, the following definition appears: “Sustainable development is the development that meeting the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987, 40).

For biocentric behavioural norms to be based on a biocentric worldview, environmental education would have to undergo a radical change, embedding the content of environmental education in deep ecology rather than shallow ecology. Such attempts are being made in Poland within the framework of alternative education and the intensively developing pedagogy of the forest. Researchers, co-creators of this new trend – Michał Paluch, Bogusław Śliwerski, Kazimierz Rykowski, Maksymilian Chutorański, Marcin Klimski, and others – show that human relationship with nature can be based on a different foundation than the ubiquitous utilitarianism (Paluch 2022;

Śliwerski 2022; Rykowski 2022; Chutorański 2022; Klimski 2014).

However, for such a change to occur on a mass scale, the core curriculum and programs for environmental education would have to change, along with the methods and forms of work in such classes. First of all, outdoor pedagogy would have to be implemented as an essential part of nature-ecology classes. Outdoor classes, and direct contact with nature have multiple positive effects both on students' learning outcomes (Chawla 2018; Chawla et al. 2014), as well as on their creative potential, health, and general well-being (Louv 2005). This demand is a challenge in the Polish educational system, as such education would require making organizational changes as well as changes in study programmes, teacher training, or legislation as regards conducting outdoor classes, their financing, and teachers' responsibility for potential student accidents (Michalak and Parczewska 2019; Parczewska and Michalak 2022). Teachers feel unprepared substantively or methodologically for outdoor activities and are concerned about whether they will be able to maintain discipline and keep children safe. They also have doubts about how parents will react if, for example, a child stumbles, gets dirty, scratches, or catches a cold. Therefore, they often, despite being aware of the benefits of outdoor education, stay in the classroom with their children (Michalak and Parczewska 2019; Parczewska and Michalak 2022).

In deep ecology, all entities, all of nature, have intrinsic value; appreciation of the value of non-human entities does not require a mercantile exchange of services or goods, and the interconnectedness of entities is not hierarchical. Each entity is part of an ecosystem and part of a network of interdependence. Instead of seeking justifications for the value of the existence of non-human nature in answers to the question "What does nature give us," one should simply notice and appreciate nature as a separate, autonomous entity. Michal Paluch, writing about such

a non-anthropocentric communication of humans with nature, notes that it requires not only a different view of nature but also an internal change of humans themselves. "I refer to the nature-word experience of silence, whispering, stammering, nothing-writing, a sense of timelessness, unproductivity, and immensity. In this context, the subject remains in a certain sensation of loss of speech to have time and space to learn to listen and touch nature" (Paluch 2022, 25). The postulate of conducting nature education on a biocentric foundation inevitably leads us to the conclusion that anthropomorphism as a pedagogical practice should be applied with awareness of its limitations.

Conclusion

Anthropomorphizing nature involves giving human characteristics and qualities to non-human representatives of the natural world. This leads to the loss of the boundary between humans and other objects of nature, and rejection of the autonomy, otherness, and integral value of other living beings.

Developing empathy toward nature based on the false notion that all living beings share similarities with humans leads nature and environmental education astray. It causes children to fail to recognize and understand the otherness and autonomy of non-human living beings, basing their respect for them on their similarity to humans. Such love of nature, based on the belief that the rest of the world is similar to us, is fundamentally selfish and, in the long term, will not stop the environmental crisis. As educators, we need to change the foundation of environmental education, from anthropocentric to biocentric. For such a change to be possible, however, we must first meet a more serious challenge: we must change ourselves.

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