

6.1

Education is only one stone in the foundation of a sustainable lifestyle

Maie Kiisel and Bianka Plüschke-Altöf

KEY MESSAGES

- Education updates and harmonises knowledge, but sustainable behaviour is shaped by many other factors that education alone cannot influence.
- Education helps overcome barriers to a sustainable lifestyle by strengthening emotional connection to the environment and supporting self-regulation.
- Environmental aspirations tend to cluster with other aspirations that increase environmental impact within the same individuals. Education may reinforce both.

INTRODUCTION

What role does education play in cultivating sustainable choices in Estonia? An analysis of two decades of Eurobarometer survey data shows that, until recently, Estonians regarded education as the most desirable instrument for addressing environmental problems.¹ In this article, we critically assess education's actual contribution to shaping a sustainable society.

All activities have an environmental impact, but which ones are framed as sustainability issues depends on social norms. In Estonia, for example, a sustainable lifestyle does not imply refraining entirely from transport, but rather preferring public transport where possible. Sustainability is expressed mainly through choosing a more sustainable option within widely accepted

practices. Our analysis focuses on activities that are well established in Estonian society as collective choices affecting a large share of the population, such as sorting waste, choosing more sustainable modes of transport and conserving energy. Although we discuss education's role in sustainable choices more broadly, our primary focus is on levels of formal education, from basic school to higher education.

EDUCATION HAS A LIMITED ROLE, AS SUSTAINABLE BEHAVIOUR IS ALSO SHAPED BY MANY OTHER FACTORS

School, as the central institution of the education system, remains indispensable for disseminating

up-to-date knowledge. Results from the 2022 Estonian Environmental Awareness Survey (EKTU) indicate that new knowledge reaches school-age cohorts more quickly than society at large. For example, respondents aged 17–26, who are still largely influenced by the education system, were better informed than those aged 27–49 about the impact of everyday activities on biodiversity, including fast fashion consumption, fossil fuel use, internet use and international delivery of goods. The Estonian school system also harmonises knowledge. PISA 2015 results in science indicated that Estonian pupils' environmental literacy – their ability to interpret environmental issues – was consistently strong by international comparison.² According to EKTU data, knowledge among 17–26-year-olds did not vary by level of education. In the 27–49 age group, however, knowledge was higher among those with more years of education. After completing school, individuals must choose which information to follow. Those with more education are more likely to participate in information-rich social networks, follow diverse media channels and engage in further training. As their information environment is broader and their incentives to deepen knowledge stronger,³ differences in environmental knowledge widen over time. School is thus effective in updating the knowledge base of the younger generation, while inequalities in knowledge increase later in life. This does not diminish the value of knowledge acquired outside formal education or over the life course.

Although education plays a key role in disseminating knowledge, sustainable behaviour depends on more than knowledge alone. According to EKTU, only 8% of respondents cited lack of knowledge as the reason for not following the sustainability recommendations listed in the survey. Many studies document the so-called attitude–behaviour gap: attitudes towards environmental problems do not automatically translate into environmentally friendly behaviour.⁴ The behavioural change perspective explains this gap through insufficient motivation or contextual barriers such as habits, norms or limited public transport schedules, which hinder otherwise motivated individuals. The social practices perspective argues that context and action cannot be separated: everyday practices reproduce the

conditions that sustain less desirable patterns.⁵ For example, commuting by car contributes to continued investment in road infrastructure. While the behavioural change approach assumes that environmentally friendly choices should stem from environmental aspirations, such choices are often driven by financial savings, convenience or health considerations. The social practices approach, in turn, argues that the meanings people attribute to their choices should not necessarily be treated as causes of their actions, but rather as consequences. The morning rush of cars, for example, is likely driven by the shared aim of reaching work, school or shops, regardless of the individual interpretations drivers give to their choices.⁶

EDUCATION HELPS OVERCOME BARRIERS TO A SUSTAINABLE LIFESTYLE

Neither perspective denies that some individuals find it easier than others to abandon established practices and adopt new ones. Those who initiate new forms of action often have a stronger emotional connection to the environment, environmental problems and proposed solutions. Alongside knowledge acquisition, environmental education typically aims to cultivate an emotional connection to the environment.⁷ Direct experience of nature plays an important role in developing this bond.⁸ According to the 2023 pilot study on pupils' environmental awareness (ÕKTU), pupils who had participated in more outdoor lessons and whose schools were more actively engaged in environmental programmes reported more frequent sustainable practices. This aligns with international research.⁹ However, 38% of Estonian school leavers reported not having had a single lesson in nature during the past year,¹⁰ which indicates substantial scope to strengthen nature-based learning.

An emotional connection can, at times, also hinder engagement.¹¹ When young people confront serious, complex and abstract issues such as climate change, they may experience distress, including eco-anxiety and climate concern.¹² Concern about climate change has risen rapidly in Estonia: in 2021, 63% of respondents in Estonia and 78% in Europe reported being seriously concerned,



particularly among younger and more educated groups.¹³ If schools create space to discuss and process these concerns, this can support constructive engagement.¹⁴ ÕKTU data indicate that greater concern about environmental and climate issues is statistically associated with more sustainable choices.

Beyond knowledge and emotional engagement, self-efficacy and self-regulation are crucial in changing established routines.¹⁵ These refer to the belief that one’s actions can be effective and to the experience of being able to change them successfully. In the EKTU, 22% of respondents, and in the ÕKTU 30%, identified at least one sustainable practice they did not follow because it failed to come to mind at the right moment, was displaced by other priorities or required more persistence than they felt able to sustain. Many respondents report being constrained by everyday overload, which is closely linked to self-efficacy and self-regulation. This suggests that carving out space for sustainable habits may be a greater challenge in Estonia than lack of knowledge. Young people and those with higher education – that is, individuals more likely to remain within the education system – appear less affected by everyday overload. Young people aged 17–26 are often still in education, with fewer structural

constraints, while those with higher education may have greater capacity to integrate additional practices, including sustainable ones, into their lives.¹⁶ Education also supports the internalisation and reinterpretation of norms. Evidence from a young adult development study¹⁷ suggests that those who remain longer within the education system are better able to cope with later societal expectations, including those linked to sustainability norms.

SUSTAINABLE PRACTICES ARE SHAPED MORE BY SOCIETY THAN BY EDUCATION

It must be recognised that social groups engaged in education do not necessarily practise sustainability more consistently than others (Table 6.1.1). Among pupils (Grades 9–12), participation in sustainable practices is markedly lower than among young adults, despite pupils’ more up-to-date environmental knowledge.¹⁸

One reason why knowledge does not translate into action is that, compared with adults, children have limited autonomy. Many relevant decisions are made on their behalf. Young people rarely carry responsibility within the household, such as organising waste sorting or managing energy use.

Table 6.1.1 Sustainable practices among pupils, youth and adults

	Grades 9 and 12	17–26-year-olds	27-to-49-year-olds
Sorting household waste	58%	77%	80%
Choosing more sustainable transport over the car	46%	73%	48%
Separately collecting hazardous waste	39%	71%	75%
Economical use of electricity and heating	49%	80%	71%

SOURCE: Students’ Environmental Awareness Pilot Study 2023,¹⁹ Estonian Environmental Awareness Survey 2022²⁰

NOTE. The table shows the share of respondents who report engaging in the listed sustainable practices ‘often’. The adult group consists primarily of individuals active in the labour market.

They live within environments shaped by parental choices, school policies and broader societal arrangements, including place of residence, transport systems, traffic organisation, school environmental management and food provision. The transition from school age to young adulthood – visible as a sharp increase in sustainable action – coincides with the stage at which young people first gain greater control over their own lives. At school age, behaviour depends less on intrinsic motivation and more on the structured context of family and school. Their competences and skills are still developing and depend largely on external incentives and challenges.²¹ Unfortunately, pupils encounter relatively few sustainability-related challenges.

From the social practices perspective, young people are novices who acquire practical wisdom – that is, self-regulation skills – not so much through rational and intellectual processes, as behavioural theorists would assume,²² but by observing and imitating experienced others.²³ These predecessors, in turn, quickly correct novices when they fail to follow established practices. Figuratively, a child enters traffic at a parent's side. By following the parent's example, the child builds the necessary movements into bodily memory (balancing on a bicycle or setting off at a green light), learns how to interpret the activity (for example, that a bicycle sign marks a cycle path and that traffic keeps to the right), adopts the objects associated with it (handlebars, pedals and fuel tap), masters forms of signalling (horn, hand signal or nod) and grasps the structure of the activity (its frequency, timing, sequence, interweaving and interruption).²⁴ Each collective behavioural pattern endures only as long as new novices are willing to learn and sustain it (see Figure 6.1.1). Where environmentally sustainable practices are not embodied at home or at school, it is unrealistic to expect pupils to challenge environmentally harmful behaviours that they are likely to perceive as normal at this stage of development.

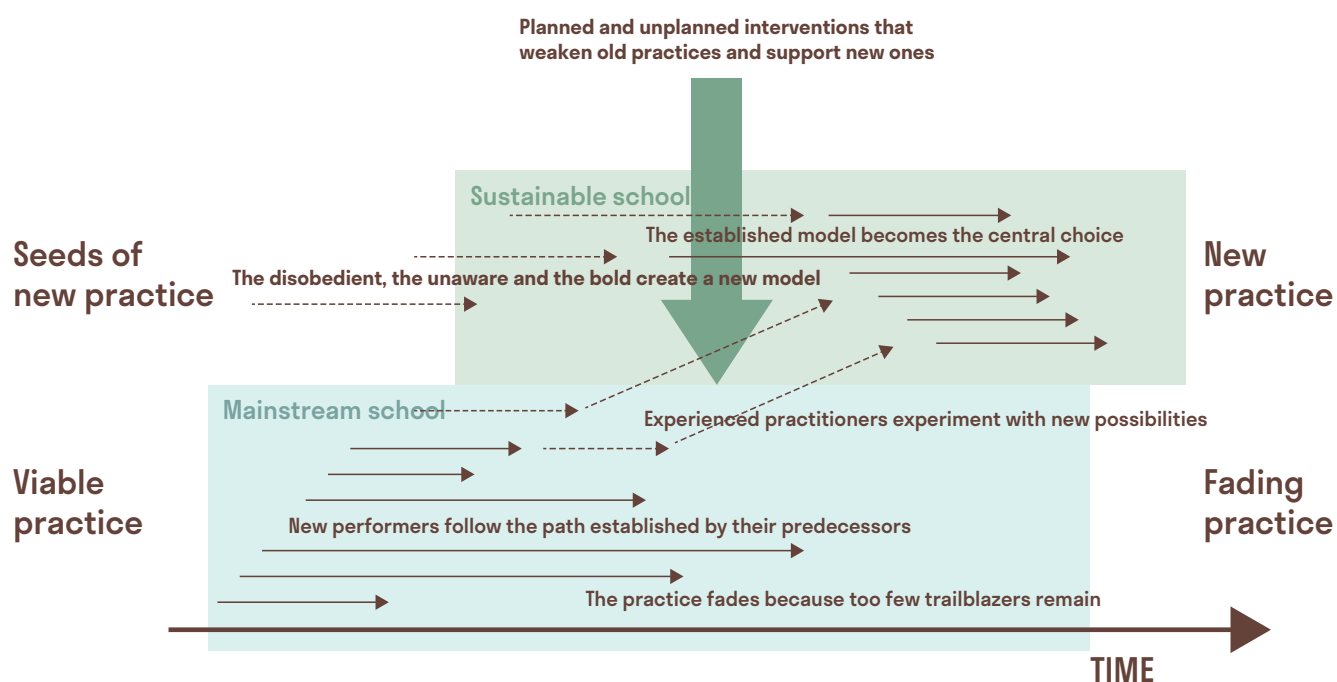
The behavioural change perspective starts from the premise that good intentions are hindered by a flawed system, which policy documents often reduce to rules, prices, infrastructure and similar factors.²⁵ According to the EKTU and ÕKTU

surveys (Table 6.1.2), respondents in Estonia most frequently identify legal constraints (for example, restrictions on redistributing food nearing its expiry date), economic logic (it is cheaper to buy new than to repair), and complexity or high costs (such as design work or insulating a house) as barriers. Fewer respondents point to constraints arising from the need to organise their lives around the expectations and norms of school, the workplace or close relationships. When sustainable choices demand additional effort, they can create a sense of struggling against an unfavourable system.

The social practices perspective does not separate sustainable aspirations from the system. On the contrary, by pursuing their ambitions, individuals contribute to weaving ever more of the social fabric that reduces opportunities for environmental protection. Environmental impact does not arise in isolation but through activities, such as visiting friends, searching for recipes online or engaging in hobbies, and not primarily through individual actions but through collective routines or practices embedded in resource use and pollution, reproduced across society. For example, a recipe choice may reinforce deforestation decisions in rainforests and increase the carbon emissions of ships transporting exotic fruit.

Although educational attainment and environmental aspirations often coincide, higher educational attainment is also associated with higher income – and with higher levels of consumption.²⁶ Sustainability principles may attach more readily to highly educated individuals, but so do environmentally intensive activities such as travel, visits to theatre, cinema and museums, sport, diverse lifestyle products, media and print consumption, and technological devices (see Figure 6.1.2).²⁷ From a social practice perspective, education opens access to patterns of social participation linked to greater economic well-being and less visible forms of consumption, reinforced by a sense of effective self-regulation. Reducing environmental impact would therefore require relinquishing opportunities for which education and income prepare individuals but whose environmental consequences remain largely imperceptible. Accordingly, the social

Figure 6.1.1 Social practice theory interpretation of the emergence of sustainable practices



SOURCE: figure by the authors

Table 6.1.2 Perceived barriers to sustainable practices among pupils, youth and adults

	Grades 9 and 12	17–26-year-olds	27-to-49-year-olds
Lack of knowledge and skills	38%	47%	31%
Lack of support from family and friends	20%	43%	34%
Lack of support from place of residence, work or school	27%	40%	39%
Environmentally sustainable choices are costly	40%	72%	65%
Lack of support from society/legislation and economic incentives	42%	60%	59%

SOURCE: Students' Environmental Awareness Pilot Study 2023,²⁸ Estonian Environmental Awareness Survey 2022²⁹

NOTE. The table shows the share of respondents who report that these factors 'rather' or 'definitely' hinder their engagement in sustainable practices.

practices approach focuses less on what occurs in people's minds and more on how the practices that structure society might be reshaped.

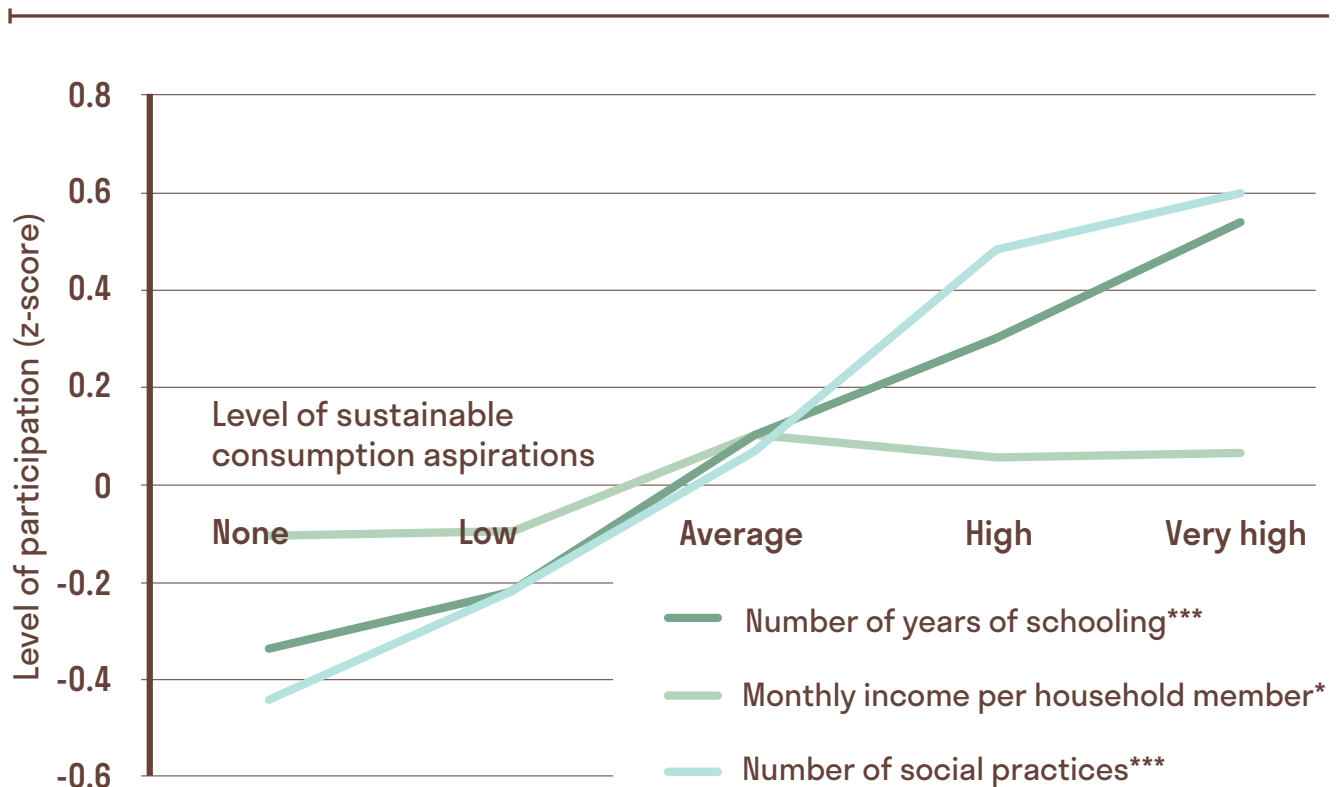
SUMMARY

Education plays several roles in shaping sustainable choices. It disseminates knowledge that has been relatively recently produced within the scientific community and translated into learning materials. Later in life, access to up-to-date knowledge becomes more uneven. Education can also give emotional meaning to environmental knowledge, helping people value what is at risk and cope with uncertainty by offering ways to move beyond anxiety. Through

the learning environment, education can help instil sustainability-related habits that should likewise be practised outside the education system.³¹ Education also develops transferable skills relevant to sustainability, including the ability to engage with social norms and decide whether to follow or challenge them.

At the same time, education opens access to patterns of social participation that increase society's pressure on nature. A central task is therefore to prepare promoters of sustainability, including through lifelong learning.³² According to the EKTU survey, individuals with higher education are more likely to draw others' attention to the need for environmental protection.

Figure 6.1.2 The relationship between sustainable consumption aspirations, education, income and participation in social practices



SOURCE: Mina. Maailm. Meedia 2014³⁰

NOTE. The graph shows the relationship between sustainable consumption aspirations (on a scale from 'none' to 'very high') and education, income and participation in social practices, based on the 2014 study *Mina. Maailm. Meedia 2014*. Sustainable consumption aspirations are measured as a composite indicator combining self-assessed environmental awareness, waste sorting and avoidance, reduced consumption, preference for ecological products, and purchase of organic food. Social practices include travel abroad and within Estonia, participation in sport and social life, consumerism and involvement in major events and civic activities. For the graph, three variables – education, income and participation in social practices – were standardised using z-scores onto a common scale (-1 to +1), indicating relative distance from the mean (+ above average, - below average). Asterisks denote statistical significance: *** indicates $p \leq 0.001$, * indicates $p \leq 0.05$, reflecting a weaker and less reliable association.



In Estonia, several programmes have recently been launched to equip decision-makers to address environmental crises and identify key decision points for change. Green skills courses have been added to vocational and higher education curricula, teachers are being trained (for example through the ABC of Climate Awareness programme), and new curricula and micro-credentials are being developed to enable those already active in the labour market to reflect on their workplace's role in shaping a sustainable world.

Alongside learning outcomes, environmental education research is returning to the practice of education itself,³³ which is not separate from broader social patterns. Examining societal interdependencies therefore requires looking inside the 'black box' of schools: designing learning processes together with practitioners – teachers, school leaders and extracurricular coordinators – and with change agents, such as parents, communities, local government actors and entrepreneurs, in order to mitigate tensions between education and sustainability.³⁴ Even so, the impact of education ultimately depends on the extent to which society as a whole is prepared to embrace change.

REFLECTION

Grete Arro

Kalevi Kull, Professor of Biosemiotics at the University of Tartu, has suggested that nature has an irresistible urge to increase beauty, and only humans are capable of resisting it.

This reflection begins from the same puzzle: why are humans capable of resisting the perfection and beauty of nature, and doing so with such force? How many people notice beauty in the fitting together of natural elements – for example, in a 'dead' tree trunk as a habitat, or in birdsong on an April morning? One can presumably stand beside such a trunk for a long time and speak about it – that is, see beauty in diversity – only if one knows and understands that diversity, if one has truly learned it and if the underlying pattern of life, invisible to the eye, is present in one's inner world. For this reason, it is worth distinguishing once again between education and knowledge. Paraphrasing Kristjan Zobel: we consider a person educated if they take an interest in economics and politics, keep up with cultural events and engage with history. Yet understanding how complex systems of living and non-living nature function, learning to know nature, or taking an interest in how forest soil forms, what birds experience during logging in the nesting season or what

role alder stands or willows play in ecosystems are rarely regarded as markers of an educated person.³⁵

Education does not equate to ecological literacy.

The article opens at least two directions for further reflection. First, do people possess in-depth knowledge of the living environment and of the environmental impacts of human activity, acknowledging that measuring such knowledge is complex? Second, if they do, is this knowledge structured in their thinking as complex systems or in some other way? Thinking in terms of complex systems requires suspending habitual linear causality and simple cause-and-effect reasoning and instead recognising properties such as feedback loops, time lags, emergence, hierarchy, accumulation, trade-offs, non-linearity, self-organisation and disproportionate effects.

Learning to understand complex systems requires an approach different from conventional instruction. It is a slow process and unlikely to occur without deliberately adapted teaching. The ability to think in terms of complex systems is often acquired by subject specialists, who may not recognise that they have learned differently

from others, nor know how to articulate complex systems in ways that distinguish them from everyday reasoning. Otherwise, we tend to attribute to complex systems properties and 'behaviours' they do not in fact possess. A future line of inquiry might therefore ask whether individuals who think in terms of complex systems differ from others in environmentally responsible behaviour. Would they form a distinct group in this respect? If this hypothesis were confirmed, it would become possible to draw a clearer distinction between education and ecological literacy and to consider how the latter might be specifically supported.

Umwelt and social practices – which came first?

The article postulates that the social practices surrounding us are at least as important in guiding environmentally responsible behaviour as what people know. This is undoubtedly true. It may further be argued that social practices also express our knowledge – what is present in our umwelt and what is absent from it. We do not act in relation to what lies outside our umwelt; we act in relation to what it contains. Social practices and knowledge can therefore be seen as complementary rather than opposing phenomena. From the agent's perspective, social practices are generally highly functional: behaviour rests on knowledge, but this does not imply knowledge of all possible consequences of one's actions, including environmental impacts. This raises the question of how social practices might change without people's own readiness. Can change be expected to occur in a top-down or externally directed manner if individuals do not experience it as meaningful from their own perspective? Meaning – the core of autonomous motivation – is among the strongest predictors of environmentally responsible behaviour. However, meaning cannot arise without some form of knowledge, whether accurate or mistaken, about the phenomenon in question. While it is reasonable to agree that, at a simplified level, many people are informed about environmental problems, the GreenComp framework³⁶ suggests that two further competences may be crucial: the ability to imagine alternative futures and the capacity to act for sustainability – for example, by initiating systemic change and engaging others. Without sustained practice of these skills during

schooling, it may be difficult later to move from awareness to transforming social practices. It is telling that the European Union's environmental education framework has explicitly identified these competences. It is also true that shifts towards environmental responsibility may not be welcomed by certain interest groups.

Being in nature or attuning to nature? Spending time in nature is widely valued in society. Recent research suggests, however, that this may not optimally support a deep connection with nature, which is a precondition for environmental responsibility. A forward-looking implication of the article therefore concerns connectedness with nature and whether education can support it. Few studies³⁷ have examined the connectedness of Estonians – often described as a forest people – with nature. International research increasingly indicates that nature connectedness – identifying oneself as part of nature and perceiving one's relationship with it in this way – predicts both well-being and environmentally responsible behaviour more strongly than mere nature contact – that is, the extent of exposure to nature. In other words, simply spending time in nature may not generate connection; what matters is what one does there. Studies point to an important distinction between being in nature and actively noticing and appreciating it. The latter predicts stronger connectedness, which in turn predicts well-being and environmental responsibility.³⁸ How much time do Estonians actually spend in nature in daily life and across the seasons, and when they do, what psychological meaning and impact does the specific activity they engage in there carry? Research suggests that taking macro photographs of moss, distinguishing the call of a leaf warbler or seeking out the flower of wild ginger has a different meaning from situations in which nature serves merely as a backdrop or resource and the focus lies elsewhere. Active and attentive noticing of nature, and gratitude towards it, are not externally observable and may not even be discussed, whereas being in nature with a mushroom basket, a disc golf set or skis appears more readily justified. It is therefore pertinent to ask: in what sense do we relate to nature, and do activities undertaken in nature even have the potential to strengthen feelings of connectedness? Environmental education



programmes that guide children and young people to focus on and notice nature – such as those developed by Asta Tuusti and colleagues – may represent a step in this direction. It is important to understand that active noticing is not merely the use of the senses, which operate in any environment, but attentive observation involves a conscious decision about what to observe and why, based on prior knowledge. Conscious noticing is the first step that may lead to subsequent processes, such as valuing perceived beauty, interpreting what is seen, and experiencing emotions such as gratitude and admiration.

In conclusion, one can only agree with the authors: education is part of culture and society, not a phenomenon separate from them. It is difficult to imagine sustainable education within an unsustainable society. At the same time, education can serve as a lever for cultural and societal change. An educated person is not necessarily guided by sustainable ways of thinking and acting, but it would be mistaken to infer from this that education hinders sustainability. Education is a necessary but insufficient condition, and examining only these two variables risks drawing misleading conclusions. Among those who are currently advancing the real world towards sustainability – both through individual practices and through steps that support systemic change – individuals with higher education are more likely to be represented. History offers examples of cultures that have consciously and successfully redirected or slowed their development in certain directions. At the level of the individual, self-restraint is likewise conceivable. Decisions to move towards a more sustainable culture have, at times in history – for example, in Japan during the Edo period, when society was far from ideal under a feudal-military dictatorship – also followed from observing and understanding natural processes and the human impacts upon them.

The question is what would lead us most quickly to a collective decision to change course. Research suggests that contemporary education has offered learners relatively few effective practices in this regard. If the education system were to provide daily opportunities to develop even these three capacities – understanding

complex systems (including humans as part of them), the ability to imagine and initiate change, and connectedness with nature through active noticing – what kind of society might emerge? Might insights be drawn from cultures that have had the capacity to damage their ecosystems but have not done so?³⁹

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