



Bayley, A. and Parsons, J. (2024) "'Listening to nature" – the rewards of an eco-creative curriculum', *Teaching Times*, 23 (4).

Official URL: <https://www.teachingtimes.com/listening-to-nature-the-rewards-of-an-eco-creative-curriculum/>

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'Listening to Nature' The Rewards of an Eco-Creative Curriculum

Amanda Bayley and Jill Parsons

It's a warm Summer's day and a class of Key Stage 2 children are spread along a river bank, headphones on and leads trailing down to submerged hydrophones in the water – the excitement is palpable and their faces light up as they start to tune in to the mysterious sounds of the river, from the 'thunder' where a small cascade rushes under a bridge to the bubbling and tinkling 'Mario sounds' in stiller areas.

These children have spent the day listening in nature as part of the interdisciplinary project, [Hear Water: building environmental empathy through deep listening](#), that combined listening, technology, science, ecopsychology, creativity, and wellbeing.



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Throughout the Hear Water project, we devised and tested a range of interactive and participatory learning activities for primary and secondary school teachers. These resources are suitable for school classrooms of around 30 children, combining cross-curricula activities, wellbeing and the outdoors.

Our guides show teachers how to implement the activities, with exercises to try, and resources to tap into, to enable more interactive learning. Teachers can work with their classes to:

- Learn outdoors to listen and sense nature in new ways
- Explore Nature Connectedness through listening games and activities
- Build hydrophones (underwater microphones) to listen underwater
- Collect underwater sounds to generate artistic outputs with music technology
- Gather scientific water data on aquatic biodiversity
- Compose and improvise with sounds from nature

Climate change is undeniably one of the biggest crises facing our planet today and, at the same time, one of the most challenging areas to teach 'in the context of a restrictive educational system' (Glackin et al, 2023, p. 12). 'Policy guidance [...] is lacking' (Innes, 2023, p. 25), and teachers are constrained by a knowledge-focused, subject-based curriculum (Glackin et al, 2023).

Working with both teachers and students we have found that listening activities and games bring deeper connections to nature. By thinking outside and across discrete subject areas, we introduce action-oriented learning that combines creative and scientific approaches to listening to nature. Resources from the Hear Water project have been created with and for teachers and young people to equip them with various means of changing eco-anxiety into eco-agency.



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A useful entry point, for teachers and students, is Bernie Krause's TED talk, '[The Voice of the Natural World](#)' (2013), which opens our ears and hearts to the reasons for listening to our natural world. It is a powerful film that indicates what we are missing by not attending to sounds in nature, and immediately questions a human-centred hierarchy.

Exercises for teachers with minimal equipment requirements

Activities for arriving in nature

Sound helps us to orientate ourselves in our surroundings. We can draw distinctions between: biophony, biological sounds; geophony, sounds that are geophysical in nature such as wind and weather; and anthrophony, sounds that are produced by humans (Krause, 2015). As we enter a natural habitat, we create ripples of disturbance – animals in the ground hear the thud of our approaching footsteps, birds spot us and might start alarm calls to alert other birds to our presence. If we can drop into a natural space, slowing down and becoming quieter and calmer, we might notice birdsong reverting to a baseline chatter and other wildlife starting to reemerge. Introducing a 'grounding' exercise with your class, is a good way to bring awareness to the senses, starting to regulate with and in nature: [Hear](#)

[Water teaching resources](#), Activity 5: 'Sit Spot – tune in to an outdoor soundscape' (Parsons, 2024, p. 3 'Tune in').

Once your group has 'arrived' in the space, you might introduce the art of silent movement. This helps us to empathise with the experience of wildlife around us. It's also a fantastic way of getting young people into their bodies – great for kinaesthetic learners and the added competition makes them more likely to engage.

Ask them to imagine what other animals might hear as they approach. Ask the group to stick their fingers in their ears and stomp around as they usually would on a walk, then ask them what they heard (through the vibrations in their bodies): probably a lot of thudding! This is what animals in the ground will be hearing as we approach, so if we want to see wildlife, we need to practise the art of silent movement.

Ask everyone to raise one leg as though they had a piece of string attached to their knee. Lower their foot and allow the toes to touch the ground gently – then roll through the ball, the side and finally the heel of their foot – see how quietly they can all do this then try moving around the space silently, repeating the 'fingers in ears' exercise to hear the difference. They will have to start noticing and avoiding twigs and dry leaves – anything that might make a sound as they move through the space slowly and mindfully (Parsons 2024, p. 5 'listen up!').

Listening games

You can turn this into a game, variously known as: Fox the Fox, Steal the Spines off a Hedgehog, or Keeper of the Keys. The basic principle is that one person is blindfolded (or closes their eyes) while the rest of the group try to sneak in and steal an object placed in front of them without being detected. It's good to use sticks as the 'bait' stacked up into a pile resembling a hedgehog, then ask the group to spread out through a wooded area (if available) to give themselves a good challenge. Point at players to start them moving, staggering it so that there are always a few players approaching from different directions. (Parsons, 2024, p.6, Listening games).

The act of slowing down and trying to move silently can really shift the energy of a class. It is also interesting to talk about how it feels to try moving silently without being detected, and how it feels to be blindfolded, knowing that others are sneaking up on you. Think about how this might relate to predators and prey – how does it feel to hunt or to be hunted?

If you don't have a wooded area, other good listening games include Bat and Moth (Parsons, 2024, p. 7), where the group explores the idea of echolocation, or a blindfold drum stalk (Parsons, 2024, p. 6), which further develops the art of slow and mindful movement to locate and follow a sound while blindfolded.

Recording sound

Focusing more on the sounds in the environment, children in Hear Water worked with audiovisual artist Kathy Hinde to build hydrophones (microphones for listening under water). This is Activity 4 on [the website](#), with a downloadable pdf. They also designed and made their own low tech listening devices from scrap (Activities 2 and 3) and created music from sounds captured in nature (Activity 8).

How do we record sound and what can this tell us about a habitat? Whilst digital devices can give us visual representations such as spectrograms, we can also record sound through mark making. There is no right or wrong way to do this, so reassure the group that no-one will be assessing their drawing skills! This is about noticing sound and finding a way to

record it. Give your group some mark making materials (it's nice to incorporate colour if possible) and some paper and invite them to spread out and find a spot to sit. Give them ten minutes or so to capture what they hear and record it. Then gather back in a group to compare and contrast the different things that they heard. This could be developed into sound mapping: visually recording where different sounds are coming from. You might also start to use different colours or marks for biophony, geophony and anthrophony. You could even create a musical or graphic score of what you hear (Parsons, 2024, p. 8).



Looking at the work of Bernie Krause, this could lead into groups developing hypotheses as to where they think there might be more or less bird or insect life, for instance capturing sound by a car park or road, versus a greener spot in the school grounds. Is there a difference in the soundscape at different times of day or in different weather or seasons? What does the presence of birdsong or the sounds of insect life tell us about the health of a habitat? What impact (if any) do human sounds have on the biophonic soundscape?

A nature-focused way to teach scientific concepts, such as pitch, frequency and amplitude, is through the cross-curricular content developed by James de Winter (2015, 2019) for primary and secondary schools. He demonstrates how to teach physics through birdsong, and also shows how birdsong can support the teaching of sound and graphs as a way to improve graph drawing skills. <http://www.physicsandbirdsong.co.uk/>

Benefits to young people

One of the key benefits to emerge from the rich, cross-curricular learning activities, was the way children felt in nature. Words like 'calm', 'peaceful' and 'relaxed' were used by the children alongside 'overwhelmed with enjoyment' and one child reporting that they found watching the waves in the water 'therapeutic'. We also found that children's connections to nature increased through the project, as measured with the Nature Connection Index (Richardson, et al. 2019). This supports research by Miles Richardson and his team at the University of Derby who set out to explore ways in which we can cultivate a deeper connection to nature ([Nature Connectedness Research Group](#)).

Whilst there are benefits to being outdoors generally, perhaps enjoying recreational activities such as running or playing football, nature can become little more than an attractive backdrop. Richardson's team worked to identify five pathways that had a significant impact on increasing participants' connections to nature, allowing them to reap the inherent mental health and wellbeing benefits. These pathways were: senses, emotion, beauty, meaning,

and compassion (Richardson [Nature Connectedness Research Group](#); see also Parsons, 2024, p. 2).



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It is easy to see how listening in nature fits within the senses pathway, however it also weaves through the other pathways. There is beauty in birdsong; the crashing of waves might stir an emotional connection to nature; one might feel compassion at the scream of a rabbit caught by a fox or find meaning in the chatter and rush of a murmuration of starlings on a cold winter dusk. So how and why do we need to start applying this in education?

Child and adolescent mental health is in crisis. One in five children aged 8-25 have a probable mental health disorder rising to one in four among 17-19 year olds (Newlove-Delgado, et al., 2023). There has been a 50% increase in referrals to mental health services in the last three years (Gregory, 2004) with anxiety and depression the most common issues (Vizard, et al., 2020).

With mental health services overstretched, schools are increasingly having to support young people with significant mental distress. Not only does this affect children in the short term, but we know that poor mental health has an impact on educational attainment and future life chances (Brooks, 2014).

Whilst the causes for this are complex, nature can form a vital piece of the puzzle in supporting and nurturing young people's mental health. For approximately 97% of human evolution we lived as hunter gatherers: our brains evolved in and with wild landscapes. Unsurprisingly, research shows that we have an inherent 'biophilic' tendency: an attraction to that which is living. We therefore respond positively to green and blue spaces, mentally, physically and cognitively. Nature can help us regulate (Ulrich, et al., 1991), can lower cortisol levels (Bratman, et al., 2012), interrupt rumination, restore our sense of wellbeing (Ulrich, et al., 1991), and help us to feel part of something bigger than ourselves.

Weaving the benefits of time in nature into the school day can also enrich learning and curiosity, helping young people to focus, increasing attention and raising attainment in science, maths, reading and writing (Lieberman, et al., 1998; Chawla, 2015; Berezowitz, et al., 2015; Williams, et al., 2012, and Wells, et al., 2015).

Young people in the Hear Water project also expressed additional ways they learnt about their connections with nature, for example: ‘usually modern technology takes us further away from nature but this time it’s doing the complete opposite and that’s a change’ (Hobbs, 2022). Participatory listening practices therefore not only encourage the development of eco-literacy, and benefit their mental health and wellbeing, but also motivate them to become agents of change.

Conclusion

The perspectives and approaches that teachers bring from their subject areas provide a variety of ways that children and students can benefit from nature connectedness while learning about science, creativity, soundscapes and wellbeing. Until there is a major shift in education policy that incorporates creative and cross-disciplinary approaches into environmental education, the Hear Water resources should at least equip teachers with the skills and knowledge they need to make some realistic and effective changes in the short term. These cross-curricular learning and training resources aim to improve teachers’ knowledge and confidence in developing eco-literacy, and strive towards the longer-term vision of an eco-creative curriculum.

In addition to the resources available on the website, a video was created to promote to teachers: https://youtu.be/zCcMx_ZZv-E. This work was made possible through collaboration with: audiovisual artist, Kathy Hinde, who led the hydrophone work and hosts the resources on her website; Matthew Olden who led the creative music technology work; Dr Ian Thornhill (University of Manchester) who led the work on freshwater ecology, and Tom Walmsley (Avon Schools Eco-Network) who coordinated our work with schools.

Additional team members were Dr Matt Baker (Bath Spa University), Dr Mel McCree (Bath Spa University), ecological consultant Sarah Hobbs, Research Associate Matteo Amadio, and Research Assistants Louis Blatherwick and Alexander Montgomery. Funding was received from the Bath Spa University AHRC Impact Accelerator Award (grant reference AH/X003191/1).

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Funding received from the Bath Spa University AHRC Impact Accelerator Award – grant reference AH/X003191/1

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