

# NATURE-BASED SOLUTIONS IN SCHOOLS

Karmen CZETT, Eszter KELEMEN

CASE STUDY: A SCHOOL GARDEN CREATED THROUGH A PARTICIPATORY ACTION RESEARCH PROJECT, LEADING TO PERSONAL AND ORGANISATIONAL CHANGES AT THE SCHOOL LEVEL



## SEEDING THE IDEA

A HUNGARIAN SECONDARY SCHOOL TEAMS UP WITH LOCAL RESEARCHERS TO TRANSFORM AN ABANDONED GREEN AREA NEXT TO THE SCHOOL INTO A SCHOOL GARDEN. FUNDING IS SECURED THROUGH A HORIZON EUROPE RESEARCH CALL.

PARTNERSHIP FUNDING

In today's turbulent times, people are losing touch with nature, leading to significant consequences – and children are particularly vulnerable. They lack decision-making power and are left out from shaping their own environment, yet their future is at risk due to interwoven environmental, economic, and health crises. While environmental education has the potential to bridge this gap, it is typically confined to classrooms and taught in silos, limiting its impact.

Experiential learning, particularly through nature-based learning methods, offers a powerful solution – allowing children to develop ecological stewardship, and build resilience. In Hungary, despite the presence of hands-on environmental education practices, systemic barriers hinder their adoption. How can green school environments, such as school gardens, and hands-on biodiversity education be integrated into public education to drive transformative change?



PLANET4B



## THE LIGHTHOUSE TEACHER

A PASSIONATE TEACHER TAKES THE INITIATIVE AND DEDICATES HER TIME COORDINATING THE PROJECT, COLLABORATING WITH RESEARCHERS, AND ENGAGING STUDENTS ALONG WITH HER COLLEAGUES.

DEDICATED TEACHER TEAMWORK

*“There are situations when a dedicated teacher [...] is able to engage with the beauty of nature.”*

*“Teachers’ cultural background and the attitude of the accompanying educator as a role model, can be extremely important.”*



## CO-CREATING THE GARDEN

RESEARCHERS REGULARLY VISIT THE SCHOOL TO KICK-START THE CO-CREATION PROCESS. THEY SHARE THEIR KNOWLEDGE ABOUT BIODIVERSITY, WHILE LEARNING FROM STUDENTS' PERSPECTIVES ON NATURE AND THEIR IDEAS ABOUT HOW TO IMPROVE THE SCHOOL GARDEN.

MUTUAL LEARNING

The co-creation of a garden is not only important for the practical application of classroom learning, team building, or physical activity. It also plays a key role in demonstrating how we can take nature into account in our everyday decisions and prioritise the well-being of other living creatures. When designing the schoolyard and school garden, there are various ways to support biodiversity, for example:

- By leaving certain areas uncut, we provide feeding and breeding habitats for pollinating butterflies, bees and other insects within the schoolyard. Simply mowing less frequently – or not at all – already increases biodiversity, but this can be further enhanced by collecting and sowing seeds of local wildflowers (e.g. poppy, common sage, bladder campion, great mullein) in these unmown areas.
- Installing birdhouses and insect hotels encourages a variety of bird and insect species to find shelter in the schoolyard.
- Composting green waste produced at the school and mulching flower or vegetable beds improves soil biodiversity and positively influences its physical and chemical qualities.

“...we tried to show my relationship with nature, I blow a dandelion and that is shown. [...] it's kind of playful I think. I used to play like that in nature, or how to say that... so when we go hiking, I go on the hardest paths and stuff like that.”

“Here among the flowers is a pollinating insect that is pollinating one of the flowers. I liked that so much because you can see that the natural order of things is working within the garden, that the bugs are pollinating the flowers and everything is working as it should.”



## GROWING OWNERSHIP AND VALUES

STUDENTS SPEND MORE TIME OUTDOORS AND TAKE CARE OF THE GARDEN, WHILE DEVELOPING OWNERSHIP OVER IT, AND CULTIVATING NATURE- AND COMMUNITY-RELATED VALUES.

ENGAGEMENT HANDS-ON LEARNING

**ABOUT THE PHOTOVOICE METHOD**  
Over the course of 6–8 weeks, volunteer students used their smartphones to take photos that reflect their relationship with nature and with each other in the garden. Afterwards, we held individual conversations with the students, during which they explained the meaning behind their images and selected their favorite ones. At the end of the school year, we organized a photo exhibition featuring these selected works. This method can help visually oriented students express their thoughts and emotions, bringing them closer to nature.

“We were able to directly point to certain natural phenomena and human creations. This made the teaching more authentic.”

“Excitement, curiosity, increased ability to stay focused, active participation, creativity.”



## TRANSFORMING THE SCHOOL

AS THE GARDEN BECOMES PART OF THE SCHOOL'S EVERYDAY LIFE, ORGANISATIONAL PRACTICES START TO EMERGE THAT CHANGE NOT ONLY THE SCHOOL'S SURROUNDINGS, BUT ALSO THE MIND- AND SKILLSETS OF STUDENTS, TEACHERS, AND RESEARCHERS ALIKE.

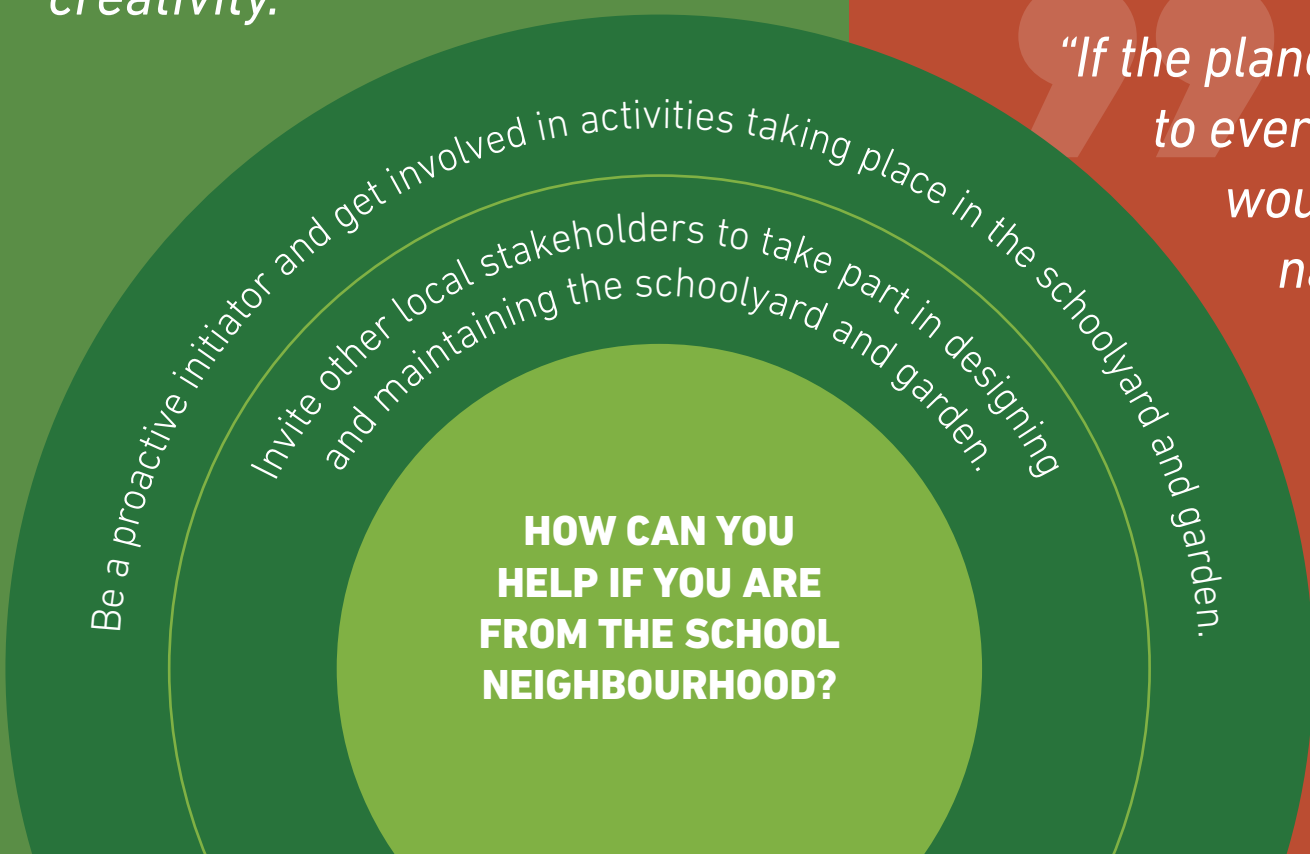
INSTITUTIONAL CHANGE SHIFT IN MINDSETS

WHAT POSITIVE EFFECTS DID TEACHERS OBSERVE DURING OUTDOOR LESSONS?

“We learned and talked in a relaxed atmosphere. The experience of being together was more engaging for the children.”

“We were able to directly point to certain natural phenomena and human creations. This made the teaching more authentic.”

“Excitement, curiosity, increased ability to stay focused, active participation, creativity.”



## NURTURING VALUES & BEHAVIOUR

INTERVENTION METHODS – SUCH AS ARTS-BASED APPROACHES AND REFLEXIVE LEARNING METHODS – ARE APPLIED TO EXPLORE HOW THE GARDEN INFLUENCES VALUES AND BEHAVIOURS. THROUGH OPEN DISCUSSION, CREATIVE EXPRESSION, AND SELF-REFLECTION, THEY DEEPEN STUDENTS' CONNECTION TO NATURE AND CULTIVATE A SHARED UNDERSTANDING OF SUSTAINABILITY.

REFLEXIVE LEARNING

ARTS-BASED METHODS

**About participatory theatre**  
Káva Theatre Company did a participatory performance in the school, addressing environmental destruction and its social consequences. Students had the opportunity to actively influence the course of the story through their participation. The process brought their emotions to the surface, and through shared reflection, we explored action-oriented solutions together.

“If the planet belonged to everyone, humanity wouldn't dominate nature.”



## CULTIVATING A BRIGHT FUTURE

OVER THE YEARS, THE SCHOOL GARDEN FLOURISHES, DRAWING MANY STUDENTS CLOSER TO NATURE, WHILE CONTRIBUTING TO RESEARCH ON NATURE CONNECTEDNESS AND THE UNDERLYING VALUES.

LASTING TRANSFORMATION

LONG-TERM ENGAGEMENT

NEW RESEARCH INSIGHTS

**HOW ARE THE OBSERVED EFFECTS CONNECTED? THE NARRATIVE OF CHANGE**  
Outdoor and nature-based lessons increased students' sense of choice and led to more cooperative relationships, thereby creating a safe collaborative space where students felt comfortable opening up. Within this physically and emotionally safe environment, the use of artistic and reflexive methods enabled participants to recognise and accept the diversity of nature-related values – and to engage with them on an emotional level. These changes helped students articulate their doubts and critical reflections on the broader social-ecological system – an essential element of transformative learning.

As a result of the process, shared values, new school norms, and behavioural patterns began to emerge. This transformation can extend beyond the school, influencing local communities and even society at large – while also working in reverse: social change can feed back into the school environment, reshaping the world of learning itself.