

## DEVELOPING ENVIRONMENTAL AWARENESS AMONG YOUNG SCHOOLCHILDREN

Judit Neszt, PhD

*Karoli Gaspar University of the Reformed Church in Hungary*

**Abstract:** *In the following we present a part of an environmental awareness programme developed for the lower primary school. An important element of the programme is the playful introduction of knowledge, exploration and action-based involvement, which not only changed the children's attitudes but also their patterns of action. They have been able to find information on the topic independently and to see the connections between the local and the global. They recognised bad routines and were able to transform the actions of themselves and their surroundings for a more sustainable future.*

**Keywords:** *environmental awareness, environmental education, social responsibility, action.*

The last decades have witnessed a worldwide rise in environmental awareness and protection. The underlying causes of alarming natural phenomenon, such as the depletion of the ozone layer, climate change, acid rain and excessive water consumption, are becoming increasingly serious problems and are increasingly visible in the media and public discourse. Environmental movements are gaining momentum, providing society with many examples of how to break with man's exploitation of the planet. The presence of social media plays a big role in this, but the campaigns that appear from time to time are not enough to create lasting change. To do this, we need to raise the next generation to be environmentally conscious in their actions and to raise future generations with this mindset.

Environmental education is perhaps one of the most important tasks that should be part of every nation's curriculum. Although the family is the primary socialisation space, families are not yet fully able to fulfil this role. Today's generation of parents has not yet received such an education, or has received it only at a lower level, and the practices that could be passed on to develop environmentally aware behaviour have not been established. The earlier that environmental education starts, the more likely it is that children will not only acquire the necessary knowledge, but that it will have a life-long behavioural impact.

When developing environmental awareness, a strong emphasis should be placed on the development of the following four factors: knowledge, attitudes, values, willingness to act and action (Nemcsicsné, 2005). Thanks to increasingly strong media campaigns, people have more and more knowledge about climate change and the negative impact of human activity on the environment, which makes them more or less concerned about their future, but this knowledge has little impact on their attitudes and willingness to act. (Kollmuss & Agyeman, 2002). Attitude is the sum of positive or negative emotional involvement, cognitive and behavioural affective responses to different objects and persons (Pratakins-Breckler- Greenwald,1989). It is the set of emotions about a subject or action. Attitudes, however, are often inconsistent with the actual action. (Aoyagi-Usui-Vinken-Kuribayashi,2003) A crucial element is how an individual evaluates the consequences of



his/her behaviour, what he/she thinks about the impact of the consequences. (Ajzen, 1991) Some theories suggest that to achieve a willingness to act, to change behaviour, it is not enough to change attitudes. (Arburnhott 2009)

Many other factors influence an individual's behaviour. These may be social cultural aspects that have a strong influence, (Ajzen, 1985, Widegren, 1998), group identity (Bonaiuto et al., 1996), or interpersonal relationships between people (Jaeger et al., 1993). In addition to those, situational factors also have a strong influence on action. Situational factors may, in fortunate cases, reinforce our prior decisions and inclinations to act, but often override them. We can talk here about economic and financial constraints, countervailing social pressures, or the choice between different courses of action (Hines et al., 1986), The degree of sacrifice required for a given behaviour and the extent of sacrifice, the lack of institutional support and infrastructure required, and the restraining force of established habits are all factors that influence the willingness to act (Stern, 2000; Arbuthnott, 2009).

Situational and other factors have the greatest influence on the formation of willingness to promote or inhibit environmentally responsible behaviour. The development of an ecocentric worldview, an appropriate level of knowledge about it, appropriate social norms and a willingness to abide by them, and the fact that the individual does not feel that environmental behaviour is too great a sacrifice are important for the development of environmentally conscious behaviour (Majláth 2009).

The early school years play a prominent role in the development of good environmental attitudes. At this age, children are very receptive to scientific knowledge. The teacher and his/her positive attitude also play an important role, which has a great influence on children, and therefore also serves to develop the right behaviour in terms of protecting the environment

Part of this process is therefore only one part of ensuring that children have the right knowledge through education. Obviously an important part, but not enough. Learning about environmental problems and their causes will not solve the problem if environmental awareness does not transform into a willingness to act (Vega, 2006). Environmental education is a process of raising a global generation that knows and cares about its wider environment and its problems. It has the knowledge, skills, attitudes, motivation and commitment to work individually and collectively to solve current problems and prevent new ones (Tbilisi Declaration, 2000 )

Environmental education is a lifelong process that goes beyond school education; it is interdisciplinary and holistic in nature and application. It focuses on the whole rather than on the single subject in its method of teaching. It examines the interactions and interrelationships between human beings and natural systems, and considers the environment in its entirety, including its social, political, economic, technical, moral, aesthetic and spiritual aspects. It teaches active responsibility by using a wide range of teaching-learning techniques and emphasises the importance of practical activity and direct experience. It also pays attention to local and global aspects. It promotes the development of intellectual sensitivity and awareness, understanding, critical and problem-solving thinking, an appreciation of environmental values, and helps to develop and strengthen environmental ethics (Palmer & Neal, 1994).

Introducing the „Many Small Things Make a Difference“ programme

In the lower primary school, we have developed a programme based essentially on active learning and action to develop environmental awareness. The programme was designed to address the most relevant issues for the age group. We therefore chose three of

the major environmental issues (water, soil, vibration, noise, air pollution and waste management) that are most easily understandable to pupils. Thus, the programme focused on water, soil and waste. Since the environment and nature conservation are closely linked, we also placed great emphasis on the conservation aspects. Designing the concept, we have made a conscious effort to follow the four stages of the creation of an environmentally conscious lifestyle, so we started with active learning about the environment and nature conservation. At the same time, we have sought to develop attitudes and then to establish a willingness to act. The programme was designed to be based on pupils' independent activities and to focus on age-appropriate experiential learning. Although the elements of the programme were developed, it was constantly changing and evolving, taking into account the pupils' ideas.

In the following, I would like to present some of the water-related activities of the programme:

Before we started to develop water-related knowledge and water-saving behaviour, we wanted to know what the children knew about the water footprint. We organised teams and held a play afternoon. First they had to complete a test to assess their knowledge of water use. For example, we asked them how much water they thought they used in total every day. They had to collect information about the ways they use water in their daily lives. Then they had to guess how much water each activity uses. As the children are not aware of the amount of water used to produce each product, the next task was to sort different foods and utensils according to how much water they use to produce them. Finally, we watched an episode of an educational animated series on the subject.

The programme drew heavily on the animated series „Albert says nature knows best“ (Kecskemétfilm Kft.& JEP-Animation, 1996), which was specifically designed for environmental education. It was an excellent choice both as a motivation and as a way to acquire the knowledge elements that lead to nature-conscious behaviour. The first two episodes focus on water, providing interesting, age-appropriate information on the water cycle, water pollution and excessive water consumption, as well as the natural consequences of these. This introduced us to the concept of the water footprint.

Our next activity was to calculate our own water footprint. There are several ways of calculating our water footprint, such as using a water footprint calculator on the internet, or using the internet to find out how much water is used to make certain foods, clothing and utensils, and then making calculations. For ease of understanding and illustration, water volumes are not only given in litres, but also in terms of how many bathtubs could be filled. We have only considered the daily and clothing water footprint for simplicity, and have included some popular consumables in the analysis.

The children were already amazed by the amount of water needed to produce some everyday products when they watched the cartoon, but the calculation of the water footprint shocked them. So we decided to visit factories where we could see first-hand the water needed in the manufacturing process. We studied paper and sugar production and plastic recycling. Not only the amount of water used in the processes was a novelty, but also the amount of waste water generated was a concern for the students. So we visited the city's wastewater treatment plant, where we learned about the biological, physical and chemical processes involved in water treatment.

Next, the children were given the task of designing measures to reduce the water footprint that are simple to implement and do not involve too great a sacrifice. These two criteria are important because, as we have seen above, the willingness to comply with



environmentally responsible behaviour is greater if it does not cause too much inconvenience or require too much sacrifice on the part of the individual.

They were free to work on this task for two weeks in the afternoons. On the one hand, they were asked to come up with suggestions and ideas, which they were asked to put on posters, and on the other hand, they were asked to illustrate and put into practice what they could.

Without being more specific, I would like to present some suggestions: Sewing bags from used clothes instead of plastic bags. Instead of paper bags, use bags made from old T-shirts and sheets in shops, when buying bread and vegetables. Shopping in packaging-free shops, using reusable containers. Not buying milk in cartons, you can ask for your own bottle at the market. Clothes bought from second-hand shops. Buying fewer clothes, buying basic items that are not fashion dependent so can be used for a long time. Avoiding bottled water and canned soft drinks. Bringing your own glasses to school, drinking tap water, getting a jug for the classroom. Refillable, reusable water bottles for trips, exercise, out of school. Showering instead of bathing, turning off tap when not using water for showering, brushing teeth. Using a washing machine at full capacity. Collecting rainwater falling on paved surfaces, using it for watering. Immediately repairing a dripping tap. Reuse grey water, transferring water from the hand basin or sink to the toilet tank. Use electrical appliances and technical equipment as long as they are working, do not replace them frequently because of fashion.

In the same time, to understand the concept of water footprint, we have also looked at the distinction between the three types of it.

The green water footprint is water from precipitation, which is mainly important for the production of agricultural, horticultural and forestry products.

The blue water footprint is water from surface or groundwater resources that either evaporates or is incorporated into a product, or water that is exported from one and re-injected into another. The water footprint can include irrigated agriculture, industry and domestic water use.

A grey water footprint is the amount of freshwater needed to extract pollutants to meet specified water quality standards. These contaminants enter the freshwater supply directly through a pipe, or indirectly from soil, impervious surfaces, or other runoff or leaching. This definition of grey water is used, when calculating the water usage to produce a product. (Fogarassy & Neubauer 2013)

On the other hand, there is another definition of grey water in connection with grey water. It is used, when calculating the water footprint of households. It is used water from sinks, shower, bath or laundry, free from harsh chemicals and toxic substances. It could be used for watering plants or feeding into the toilet tank.

To teach and raise their awareness about this, we have created a board game with the children, where entering each field, they have to answer questions about water and water footprints from cards drawn from a deck of the same colour, or solve the problem given on the card. The number of cards can be expanded so the game does not become boring. The children tried to come up with as many and more difficult questions and tasks as possible, coming up with new ideas.

At the same time, we started to work on the problem of rainwater. We visited the agrometeorological station in our town, observed their work and, with the help of their staff, set up our own meteorological station. This was the start of measuring the amount of rainwater and comparing the data with previous years. This was a longer process in which the children could explore the effects of climate change. As part of this, we made regular visits

with the staff of the Kiskunság National Park to the shallow lakes in the National Park, which have slowly dried out over time due to lack of rainwater and dying out of their natural habitat. In two years, one pond has disappeared in front of our eyes.

We also studied the quality of surface water and the water that collects on different surfaces. We also asked for expert help, learned about simple sensory tests (discolouration, visible impurities, odour) but also about microscopic examination of water and the assessment of its pH value. Samples were taken from the nearby rainwater pond, the canal that runs through the town, rainwater run-off from the roof, the puddle in the schoolyard and rainwater collected at the roadside. These were analysed physically, microscopically and Ph, and our observations were summarised in tables.

Obviously, it is not possible to detect pollutants at home, but it was important to familiarise the students with the water polluting activities of households. Domestic water pollution accounts for almost as much of the damage to the planet's water resources as agricultural activities, so it is worth paying attention at home to reduce it.

Children once again had two weeks to work in groups to collect information on how households are polluting surface water, groundwater and the water that goes into the sewage system. They were shown the biodegradable products used in households and discharged into the sewage system through drains, which are strong chemical pollutants. Cosmetics, washing-up liquids, detergents, rinsing agents, cleaning products and disinfectants used in everyday cleaning were presented. They also dealt with food residues, used oils, fats and other kitchen materials that end up in the drainage system. They found a solution to this problem in the form of selective waste collection and composting, thus reducing the pollution of water.

The polluting impact of agriculture has been addressed. As our city is located in the largest agricultural area in the country, we had no difficulty in monitoring production. Once again, with the help of experts, we learned about the materials used there, of which there were several tonnes in storage waiting to be used.

We went to the local farmers' market, where the children questioned the vendors in groups about the chemicals used in the production process. They were taught here that small-scale farmers selling their own leftover products use far less chemicals than industrial-scale production. By developing environmentally conscious consumer behaviour, households can further reduce the burden on surface and groundwater. This included the consumption of organically grown fruit and vegetables, which reduces the inputs of fertilisers, pesticides, insecticides and herbicides. Students who lived in a backyard house tried to have a vegetable garden where they could grow organic vegetables without chemicals. They were helped to do this by an organic gardening expert who showed them how to use plant associations to help control pests. We were also given our own plot of land in his garden, and the children were able to work on it once a week. To our sincere delight, most of the children also came during the summer holidays to look after the plants and harvest the crops, which they were of course able to take home.

Of course, the programme could not have worked effectively without the support of parents. Before the programme started, we called the parents of the class together for a discussion, explaining the programme and all the possible consequences it would have on their lives. Fortunately, there was a very positive response to the programme, and they tried to implement in their own households any ideas that would move their lives towards sustainability. Often this required extra work, sacrifices and lifestyle changes, which their children suggested and together they achieved.



### Evaluation

After the end of the programme, we again asked the students to fill in a questionnaire on water pollution and water use. Not surprisingly, they showed a wide range of knowledge. At the end of the programme, each group prepared a presentation to show to their parents and each other on the last day. These presentations demonstrated their ability to see local and global problems and to develop adequate action plans.

### Longitudinal assessment:

10 years after the end of the programme, we contacted those, who have been part of it in their primary school years. We created a questionnaire to measure the environmental awareness of their consumer habits. The questionnaire was delivered to the target group in two ways. Firstly, by direct contact on Facebook, and secondly, by the snowball method, assuming that the former classmates are still in contact with each other. The method proved to be effective, with 92% (112 person) of programme participants completing our questionnaire.

Based on the answers to the questionnaire, 87% of the group still use textile shopping bags. 81% regularly buy second-hand clothes. 79% do not buy mineral water and carry tap water in refillable bottles. Great attention is paid to minimising household water consumption 78% (this is mainly reflected in the purchase of water-saving appliances, taps and a preference for showers). 76% buy vegetables from local producers at the market or grow their own at home. 45% pay attention to minimising household chemical use, one of the areas where we found a big drop. From the responses, we also found that women are more likely to be environmentally aware when it comes to shopping and household management. Men are more attentive to energy saving and the use of green energy. In the light of these data, we can say that the knowledge and attitudes they acquired as young school children still influence their willingness to act and their actions today.

In the design and implementation of the programme, the triad of „Learn, Experience, Do“ was constantly kept in mind. We were aware that the curriculum should include experiences and experiences that lead to a greater awareness of social and moral responsibility. It is particularly important to raise awareness of the role of one's own individual value system and to develop in students a willingness to review it. This is an essential prerequisite if we want to equip the future generation with competences towards sustainability (Sibbel, 2009).

### Bibliography:

- AOYAGI-USUI, M.–VINKEN, H. & KURIBAYASHI, A.(2003). Pro-environmental attitudes and behaviors: an international comparison. *Human Ecology Review*, 10. 23–31.
- AJZEN, I. (1985). From intentions to actions: A theory of planned behavior. In: KUHL, J. & BECKMAN, J. (eds.) *Action control: From cognition to behavior*. Heidelberg: Springer.
- AJZEN, I (1991). The theory of planned behavior. *Organisational Behavior and Human Decision Process*. 50, 179–211
- ARBUTHNOTT, K. D. (2009). Education for sustainable development beyond attitude change. *International Journal of Sustainability in Higher Education*, 10, 152-163.

- BONAIUTO, M., BREAKWELL, G.M. & CANO, I. (1996). Identity processes and environmental threat: The effects of nationalism and local identity upon perception of beach pollution. *Journal of Community and Applied Social Psychology*, 6, 157-175.
- FOGARASSY, Cs & NEUBAUER, É (2013) Vízérték és vízvagyoneértékelés. *Journal of Central European Green Innovation* 1 . 53-69.
- HINES, J. M., HUNGERFORD, H. M. & TOMERA, A. N. (1986). Analysis and synthesis of research on responsible pro-environmental behavior: a meta-analysis. *The Journal of Environmental Education*, 18, 1- 8.
- JAEGER, C., DÜRRENBERGER, G., KASTENHOLZ, H. & TRUFFER, B. 1993. Determinants of environmental action with regard to climate change. *Climate Change*, 23, 193-211.
- KOLLMUSS, A. & AGYEMAN, J. 2002. Mind the Gap: why do people act environmentally and what are the barriers to pro-environmental behaviour? *Environmental Education Research*, 8, 239-260.
- MAJLÁTH, M.(2008) What are the Main Psychographic Differences between Persons Behave in an Environmentally Friendly Way and Those Who Do Not? In: Kadocsa, Gy (szerk.) MEB 2008 : 6th International Conference on Management, Enterprise and Benchmarking Budapest, Magyarország : Budapest Tech (2008) 443 p. pp. 217-226. , 10 p.
- NEMCSICSNÉ ZSÓKA, Á. (2005) Consistency and gaps in pro-environmental organisational behaviour. Doctoral dissertation. Budapest: Corvinus University of Budapest.
- PALMER, J., & NEAL, P. (1994) *The Handbook of Environmental Education*. London: New Fatter Lane.
- PRATAKINS, A. R.–BRECKLER, S. J. & GREENWALD, A. G. (1989). *Attitude structure and Function*. Hillsdale, New York.
- SIBBEL, A. (2009). Pathways towards sustainability through higher education. *International Journal of Sustainability in Higher Education*. 10.10.
- STERN, P. C. 2000. Toward a coherent theory of environmentally significant behaviour. *Journal of Social Issues*, 56, 407-424.
- TBILISZI DECLARATION (2000). Kormányközi Konferencia a Környezeti nevelésről az UNESCO és a UNEP közös szervezésében. Tbiliszi, 1977. október 14-26. Zárójelentés. Budapest, Magyar Környezeti Nevelési Egyesület
- LASSO De La VEGA, E. (2006): A Preliminary Evaluation of Awareness, Knowledge, and Attitude in Environmental Education Specialist, Instructors, Students, and Parents in Southwest Florida. *Florida Scientist*, 69. 2. sz. 166–178.

**Video:**

Albert says nature knows best. Water, the endless cycle. ( S01. Ep02.) JEP-Animation & Kecskemétfilm Kft. 1996. <https://www.youtube.com/watch?v=6PCTQcma110>