GREEN EDUCATION

FOR PRIMARY TEACHERS IN BULGARIA, ROMANIA AND SERBIA

GREEN SCHOOLS

THEORETICAL AND PRACTICAL MODEL

Green Education for Primary Teachers in Bulgaria, Romania and Serbia. Theoretical and practical model

The publication is created within the European project "Green Schools", which includes three organizations - the Bulgarian Union of Teachers (SEB), Teachers Union of Serbia (TUS) and the Trade Union of Teachers in Romania (FSLI).The project is implemented within the Erasmus + program, Grant Agreement № 2021-1-BG01-KA220-SCH-000023947 by the National Agency for Human Resources Development in Bulgaria (HRDC).

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therein. The links to resources provided were accessible at the time of writing the current manual.

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Contents

Endorsements

I am pleased to endorse the Green Education for Primary Education Teachers model, which offers an insightful and comprehensive framework to incorporating sustainable practices and environmental awareness into the classroom.

The publication is organized into four chapters, each providing valuable information and guidance on different aspects of green education. In chapter one, it explores the national baseline in green education for Bulgaria, Romania, and Serbia, as well as the thematic focus and global trends in green education.

Chapter two provides practical methods for incorporating green education into primary education, including education space design, rituals, images, videos, books, project-based learning, game-based learning, outdoors learning activities, and engaging external speakers.

Chapter three focuses on training primary teachers in green education, offering a methodological framework for training courses, preparation, draft agenda, follow-up support, and analysis of pilot trainings with primary teachers. The evaluation of learning, key findings, conclusions, and recommendations are also included.

Finally, chapter four offers insights on embracing the green schools model, including engagement with other partners and schools.

As an expert in the field of pedagogy, I highly recommend the model as an essential resource for primary education teachers seeking to incorporate sustainability and environmental stewardship into their curriculum. It offers practical strategies and techniques for integrating green education into the classroom, providing valuable guidance and inspiration for educators at all levels. Overall, this publication is an

excellent resource for anyone interested in promoting sustainable practices and environmental awareness.

Prof. Galin Tsokov

May 2023

I am pleased to endorse the Green Education for Primary Education Teachers model, which provides a comprehensive guide for educators seeking to promote sustainable practices and environmental awareness in the classroom. This book is an indispensable resource for primary education teachers, offering practical advice and guidance on incorporating green education into the curriculum.

The model is based on a detailed analysis of the national baseline for green education in Bulgaria, Romania, and Serbia, as well as global trends in green education.

In addition, it covers a variety of methods for incorporating green education into the classroom, such as education space design, project-based learning, game-based learning, and outdoors learning activities. These techniques and strategies offer educators practical tools for promoting environmental awareness and sustainable practices among their students.

The publication also focuses on the training of primary teachers in green education, providing a methodological framework for training courses, preparation, draft agenda, follow-up support, and analysis of pilot trainings with primary teachers. It emphasizes the importance of evaluating learning, and it includes key findings, conclusions, and recommendations.

Finally, the model provides insights into embracing the green schools model, which involves engagement with other partners and schools. The chapter highlights the importance of collaboration and networking in promoting environmental awareness and sustainable practices in schools.

Overall, the Green Education for Primary Education Teachers is a valuable framework for educators seeking to incorporate sustainability and environmental

awareness into their curriculum. As someone who has worked in the field of education for many years, I highly recommend it to any primary education teacher looking to promote sustainable practices and environmental stewardship in the classroom.

Prof. Dora Levterova

May 2023

GreenComp Visualisation, © EC 2022

Introduction

The current theoretical and practical model provides a framework for primary education teachers seeking to promote sustainability and environmental stewardship in the classroom. At its core, the publication offers a practical model for incorporating green education into the curriculum, while also providing a framework for shaping future training programs for teachers.

Aligned with current EU policy related to the Green Deal and the overall movement towards circular economy, the model offers practical tools for promoting sustainable practices and environmental awareness at the primary education level.

We are at a critical point in our planet's history, where the impacts of climate change and environmental degradation are becoming increasingly severe. The need to act has never been greater, and it is only by working together and instilling a sense of responsibility in future generations that we can hope to address these challenges.

As many famous eco-activists and environmentalists, have emphasized time and again, we must act now to protect our planet and our future. By promoting sustainability and environmental awareness in the classroom, we can empower young people to become the change agents we so desperately need.

The current publication is designed to be accessible and user-friendly, providing a step-by-step approach to incorporating green education into the curriculum. From analyzing the national baseline for green education in Bulgaria, Romania, and Serbia, to exploring global trends and practical methods for incorporating green education into the classroom, the manual covers a wide range of topics.

But the model is more than just a source of inspiration for primary education teachers. It also provides a framework for shaping future training programs for teachers. By providing a methodological framework for training courses, preparation, and evaluation, the manual offers valuable insights into how to effectively train primary education teachers in green education.

Chapter 1 - Green Education Topics for Primary Education Level

In this chapter, a comprehensive examination of the national baseline for green education in Bulgaria, Serbia, and Romania is presented. Through an exploration of both the domestic and global trends in green education, readers are provided with valuable insights that confirm the necessary direction for developing a theoretical and practical model tailored for primary teachers. These findings constitute a solid foundation for the model, permitting the introduction of new elements that are not only feasible but also valuable to the primary education context.

National baseline in green education: Bulgaria, Serbia and Romania

Within Green Schools project, research teams led by three trade unions of teachers from Bulgaria, Romania and Serbia, conducted a desk research on the current provision of ecological education at primary education level. The desk research confirmed the long-lasting practice and tradition of the three education systems in engaging pupils with the topic for preserving environment.

The national provisions in legislation with regard to green education at primary level are translated in concrete subjects. While the names of these subjects differ in each of the reviewed countries, on overall they share common direction in terms of topics and methods used. In terms of topics, students are encouraged to understand the different elements of environment such a water, soil, air, animal and plan world. This new knowledge is presented in relation with their own and wider society impact for the wellbeing of nature. For example, how high consumption creates large amount of waste, using a lot of energy leads to climate change, etc.

Since green education is presented through different forms of classes - compulsory, elective and/or extracurricular, primary teachers exploit wide range of learning methods: such as observations, experiments, stories, scientific, drawings, practical activities, walks, hikes, excursions, fun games, orientations, green camps, exhibitions, watching and debating on TV shows or social media videos, ecological contests.

Bulgaria

In 2016 an ordinance, issued by the Minister of education and science established the state education standard in Bulgaria for civic, health, ecological and intercultural education. Ecological education is defined as a process for developing ecological culture, ecological consciousness and ecological behaviour in their mutual interconnection leading to recognising ecological laws, protection, enhancement, management and rational usage of natural resources, as well as protection of environment and ecological equilibrium (Ordinance №13, 2016).

The key learning objectives defined in state standard can be summarised, as follows:

• ensure students' knowledge and compliance with the norms of ecological culture and behavior with a view to nature conservation and creation of a sustainable environment;

• ensure knowledge of the mechanisms of public institutions and civil society for the implementation of shared responsibility for the protection of the environment and shows readiness to participate in them;

• build students' skills to make connections between different spheres of public life and to understand the causes of social inequalities, environmental and global challenges;

• build and maintain a positive psychological climate and opportunities for choices related to health, ecology, civic participation, intercultural tolerance, mutual understanding, respect and respect.

Romania

The only legal provision in the field of ecological education is the adopted in 2022 Order No. 4.147/ June 29, 2022, defining the Framework Methodology regarding the organization and operation of "green schools" issued by the Ministry of Education.

The order describes the behaviours which the students must acquire (Order No. 4.147, 2022):

- students correctly identify and signal environmental problems from the community to the competent authorities;
- students react responsibly to the behaviour of others natural or legal persons who put nature or people in danger;
- students take part in voluntary actions for protection environment, restoration of flora and fauna, afforestation, creation of spaces green;
- students are actively involved in local groups for growth quality of life in their community.

According to the order, a "green school" is an educational organisation that promotes attitudes/skills acquired by students, such as:

- responsible attitude towards the environment and face of the way of using the resources;
- solidarity; social responsibility;
- development cooperation;
- saving resources;
- ability to analyze the quality of the environment, corresponding to the community in which the students live;
- capacity for critical analysis of environmental problems manifested at national/global level;
- positive relationship within the various communities;
- correlation, in different contexts, of rights with responsibilities corresponding to them;
- analytical attitude of the positive consequences and those negative related to people's lifestyles in what concerns sustainable development.

Students of a "green school" can identify reliable and competent sources of information regarding the protection and quality of the environment. They are able to formulate and express ideas, points of view, criticism and arguments regarding environmental issues and propose alternatives, solutions to environmental problems, taking sustainable decisions and responsibility for these solutions.

The review of national normative documentation suggests several key objectives for the primary education level with regard to green education:

- Understanding and using basic notions related to environmental protection;

- Training and practicing the abilities to explore/investigate the surrounding environment;
- Developing motivation and responsible attitude towards maintaining and improving the quality of the environment.

Serbia

Similarly, to other countries reviewed, the basis of green education in Serbia for the primary education level is laid within a key legislative act. In Article 21 of the Law on Basic Education and Upbringing (Law on Basic Education and Upbringing, 2021) of this law defines the goals of education and upbringing, among which is the development of awareness of the importance of sustainable development, protection and preservation of nature and the environment, and ecological ethics, protection and welfare of animals. According to Article 22 students after completing their basic education and upbringing are expected to be able to use scientific knowledge and technology effectively and critically, while showing responsibility towards their own life, the lives of others and the environment.

At younger ages, the emphasis is on familiarizing students with basic terms related to ecology and the environment, so that in older ages they can move on to the practical application of the acquired knowledge. Students are shown the factors that positively and negatively affect the natural environment, as well as ways and measures to prevent and protect it from everything that damages it.

The aim of environmental education and upbringing is also to raise awareness that nature is not "something far away", but that we interact with it on a daily basis and that it largely defines who we are and what we are like.

Global trends in green education

In 2015 the United Nations adopted the 17 Sustainable Development Goals (SDGs), also known as the Global Goals, in an attempt to encourage global effort for ending poverty, protecting the planet and ensuring that by 2030 all people enjoy peace and prosperity (UN, 2015). Many countries integrated these goals as part of their national policies, including those with focus on education.

In 2019 the European Union accepted the Green deal, resetting its firm commitment to tackle climate and environmental-related challenges (European Commission, 2019). Making Europe the first climate neutral continent in the world has been confirmed as a primary goal. The envisaged change requires transformation of all economic sectors and embracing a circular model of development.

The circular economy is seen as a main vehicle of the green transition for EU. It emphasises on economic development, which according to Pauline Deutz (2020) is: "designed with the intention that maximum use is extracted from resources and minimum waste is generated for disposal".

The role of education systems and especially teachers is crucial in building the right mindsets of current and future generations to ensure wide-scale implementation of the circular economy principles. In the Council Recommendation on environmental sustainability, the learning for green transition is highlighted as a key priority of education and training policies and programmes (Council of the European Union, 2022). Sustainability is considered as a key component of the entire spectrum of education and training, including curricula, professional development for educators as well as buildings, infrastructure and operations. The

Recommendation calls for alignment with UN's Sustainable Development Goals. *Education systems are encouraged to provide learners from an early age with opportunities* to:

- understand, engage with and value the natural world and its biodiversity;
- create a sense of curiosity and wonder and
- learn to act for sustainability, individually and collectively.

The Recommendation reiterates the key task of education organisations to provide learners with access to environmental information (e.g., drivers and effects from climate, environmental and biodiversity crisis), as postulated in the Aarhus Convention (UNECE, 1998).

The increasing focus of EU on education for sustainability as a measure to tackle climate challenges is further elaborated in the **European Sustainability competence framework** (GreenComp), defining 12 competences (Bianchi et al., 2022) which can be presented in the following table format:

European Sustainability competence framework (Bianchi et al, 2022)			
Embodying sustainability values	Embracing complexity in sustainability	Envisioning sustainable futures	Acting for sustainability
Valuing sustainability: To reflect on personal values; identify and explain how values vary among people and over time, while critically evaluating how they align with sustainability values. **Supporting fairness**: To support equity and justice for current and future generations and learn from previous generations	**Systems thinking**: To approach a sustainability problem from all sides; to consider time, space and context in order to understand how elements interact within and between systems. **Critical thinking**: To assess information and arguments, identify assumptions, challenge the status quo, and reflect	**Futures literacy**: To envision alternative sustainable futures by imagining and developing alternative scenarios and identifying the steps needed to achieve a preferred sustainable future. **Adaptability**: To manage transitions and challenges in complex sustainability situations and make	**Political agency**: To navigate the political system, identify political responsibility and accountability for unsustainable behaviour, and demand effective policies for sustainability. **Collective action**: To act for change in collaboration with others. **Individual initiative**: To identify own potential for

for sustainability. **Promoting nature**: To acknowledge that humans are part of nature; and to respect the needs and rights of other species and of nature itself in order to restore and regenerate healthy and resilient ecosystems.	on how personal, social and cultural backgrounds influence thinking and conclusions. **Problem framing**: To formulate current or potential challenges as a sustainability problem in terms of difficulty, people involved, time and geographical scope, in order to identify suitable approaches to anticipating and preventing problems, and to mitigating and adapting to already existing problems.	decisions related to the future in the face of uncertainty, ambiguity and risk. **Exploratory thinking**: To adopt a relational way of thinking by exploring and linking different disciplines, using creativity and experimentation with novel ideas or methods.	sustainability and to actively contribute to improving prospects for the community and the planet.

The GreenComp framework provides ideas for teachers at primary education level both in terms of topics and methods to be embedded when delivering ecological education. A strong emphasis is placed on **building values in learners**, which can form the basis of their proactive behaviour in respecting and protecting the ecosystem. Furthermore, enhancing systems thinking from an early age creates conditions for deeper understanding of the interconnections that form contemporary world. A very strong element of the framework is the calling for individual responsibility and action for ensuring sustainability. This is directly linked to teachers' role in fostering autonomous and explorational learning in the classroom and actually moving beyond the borders of the classroom and providing interactions with the wider environment beyond the school's borderlines.

The above observations are confirmed by a recent study by OECD and the Joint Research Centre of the European Commission on the level of sustainability competences of young persons in EU. According to the outline of the study results (Borgonovi et el., 2022): "Nearly 80% of young people report being aware of climate change and global warming. But while they are aware, they are less likely to participate in collective activities aimed at promoting environmental protection. Appreciation and protection of our environment needs to be made a shared cultural and social norm that is taught *from an early age*. This requires a whole-school and interdisciplinary

approach, encompassing teaching and learning, active participation from students and parents, and partnerships with local communities."

The report (OECD, 2022) further confirms that environmental awareness varies by environmental topic. For example, young persons show high awareness about air pollution, but not so much about the use of genetically modified organisms. Similar findings are identified concerning their pro-environmental activity. Majority are engaged in energy saving activities for environment reasons, but fewer are engaged in activities in favour of environment.

The report makes a strong call for action for European societies, which: "must nurture in new generations not only a sound understanding of science but also an appreciation of the fragility of the environment and national ecosystems. The goal is **to propel their willingness to protect the planet and empower them to contribute through their work and everyday actions to the green transition**."

In light of outlined trends, the emerging objective of education of children at primary school level is to develop genuine link between the child and nature (love for the nature). Ensuring strong emotional connectedness with environment is the fundamental condition for developing sincere motivation to take care of this environment. This objective is linked to what can be named

as **ecological consciousness (awareness).** It is important to highlight that this connection with nature is interconnected with the link with animals living in nature and understanding that they are the victims of all the harm that is done to ecological environment.

In one of the leading courses offered by European Commission through EU Academy (EU Academy, 2022) on sustainability in the classroom and beyond the above object is further elaborated in the context of current ecological education across Europe As emphasised by the course authors:

“Recycling is important. Polar bears are vulnerable. We should raise awareness of these things – but we should not stop there. …Awareness-raising and experiences in nature are not enough to teach sustainability. Pupils should not just be learning about and in the environment – they should also be learning for sustainability. This means examining how the environment interacts with the social, economic and cultural sphere, as well.”

Chapter 2 - Green Education Methods for Primary Education Level

This chapter is dedicated to presenting a comprehensive collection of green education methods for the primary education level. Drawing on the findings from the previous chapter, the objective of this chapter is not to propose revolutionary alterations in content and methods but rather to foster critical thinking among professionals in the field, encouraging them to scrutinize their own practices and integrate relevant elements into their educational settings. The methods compiled herein are grounded in experiential and action-based learning, serving as an organic and continual facet of the educational process. For trainers of primary teachers, this chapter constitutes a fundamental framework for constructing a system of continuous professional development initiatives for teachers.

Rationale for methods selection

The research team conducted a thorough review of current practice in the field of green education at primary education level to identify effective teaching methods. The findings from the national research were further enriched by desk research on global know-how in the field. The current chapter presents a collection of methods/practical activities that teachers can embed in their daily work with pupils. The selection of methods was made in compliance with the guidelines put forward in Council Recommendation on learning for the green transition (Council of the European Union, 2022):

- Provide learners with **hands-on opportunities** to observe and care for nature, and to *reduce, repair, reuse and recycle*, thereby helping them to understand the importance of sustainable lifestyles and the circular economy;
- Develop problem-solving and collaboration skills; foster critical thinking, media literacy skills and systems thinking; and **support positive action**, including volunteering, to confront and reduce the fear and disempowerment that learners might experience in the face of the planetary crises;
- Teach and learn in interdisciplinary ways, taking into consideration socio-emotional aspects of learning, so that all learners can become **agents of change** and learn to reflect and act, both individually and collectively, locally and globally, for a more sustainable world;
- Use both traditional and innovative learning approaches, including the STEAM approach, hackathons, service learning and gamification.

The research presented in Chapter 1 confirms that in all countries reviewed there are solid foundations for green education in terms of legislative base, curriculum and methods introduced. The collection of methods to be presented in current chapter are not aimed to suggest radical change in content and methods is needed but would like to encourage professionals in

the field of green education to reflect on their own practice and embed what they consider relevant in their educational environment. For trainers of primary teachers, this chapter might serve as a basic framework for building continuous professional development opportunities for teachers.

The focus in presented collection is on methods are based on experiential and action-based learning. The other distinctive feature of presented practical activities is that they are seen as a natural, ongoing part of the educational process, which enables developing green mindset in learners in a sustainable manner.

Utilizing integrated approach, i.e., to use presented activities in a systemic way, allows pupils to a get a comprehensive understanding of the green context. For example, when observing protected natural areas, they will get a very clear picture of the desired state of positive change and reflect on their own contribution. Observing landfill sites and polluted areas, will allow them to set targets for their own contribution. The overall learning effect pursued is to build strong awareness of what is right and what wrong, and how with our efforts the balance can be changed in favour of nature.

Education space design

Pupils at primary education level spent most of their learning time in one and the same classroom. This provides good opportunity for teachers to design

this physical space in such a way so that to convey positive messages related to green topics addressed. There are wide range of opportunities to explore from painting the walls in nature - like colours, arranging living plants to placing photos/images from nature on the walls. Furthermore, teachers can consider placing recycling bins in the room. It is recommended to engage parents and children in the design process by communicating the starting motivation, which is related to the common effort of taking care for environment, which requires ongoing efforts.

Idea 1 - ask each pupil to bring an A4 photo from a family trip in nature, showing the beauty of nature.

All photos will be arranged across the classroom instead of using professional images and in such way pupils' ownership on their green learning space will be fostered.

Idea 2 - instead of buying plants, with the support of their teacher children can grow the plants to decorate their classroom.

The process of growing plants can be also seen as a daily ritual since children will have the task to take care of their plant on ongoing basis. Start with easy-to-grow plants that are typical for your region.

Idea 3 - in Bulgaria (Caps for Future) and Serbia (Caps for Handicap) there are national eco-initiatives, focussed on collecting bottle and other plastic caps. With the funds collected from recycling the caps, equipment for the health care system is bought or support for handicap person is provided.

In addition to the classical recycling bins, teachers can present the idea to children and together decide on designing a special box for collecting only caps.

Idea 4 - create a green rules board. At the beginning of the school year, teachers discuss with pupils the importance of protecting environment and emphasise that each person can make a small daily contribution.

In the process of this reflection, a set of simple “green” rule can be identified and written on a board hanged on a visible place in the classroom so that everyone can see it.

Sample “green” rules:

- Bring your own water bottle.
- Save water.
- Bring your own home-made food and cookies.
- Keep it clean.
- Walk/Bike or Scoot to School.
- Recycle.
- Reuse.
- Don’t waste.

Rituals

Introducing daily/weekly rituals linked to care for nature and animals is a key factor for building sustainable green mindset. As mentioned above, one example for a daily ritual might be taking care of the indoor plants in the classroom. Teachers can decide in relation with their schedule whether a ritual

can be conducted on a daily or weekly basis. Eventually, what is important is to ensure regular and long-term practice.

Idea 1 - reflect on the class's green footprint. At the end of each week, teacher and students make a short reflection. It would be recommended to try keep a record of reported numbers. For example, number of days that each pupil walked/biked or scoot to school; number of days that each student brought own water bottle or food. If there is enough room a checklist board can be placed for children to tick every day and at the end of the week to be easier to count the numbers.

Idea 2 - breathing exercises. Everyday can start and finish with a 1-min breathing exercise. The main message with this exercise is to nurture

gratefulness for the air we breathe. Teachers can invite children to express this gratitude verbally by using sample statements such as: “We are grateful for the air we breathe!”, “Thank you nature for the air we breathe!”, etc.

Images, videos and books

Using impressive images can raise awareness of pupils and encourage their proactivity on green topics is a useful approach.

Idea 1 - Use images from external sources. Some examples of **impressive images** that can be used as part of PowerPoint presentations (EU Academy, 2022) are presented below:

Images send direct and strong messages and influence on the emotional perceptions of learners, which is a prerequisite for deeper learning.

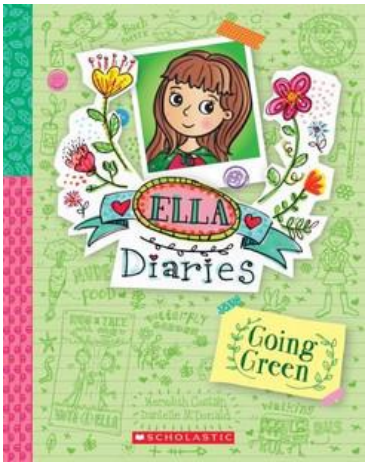
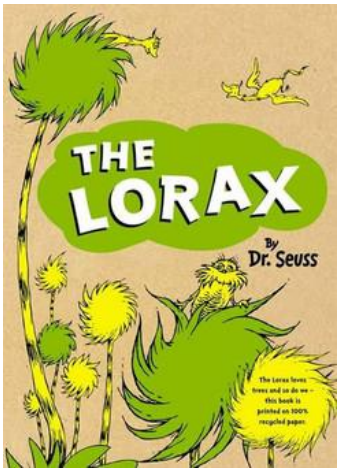
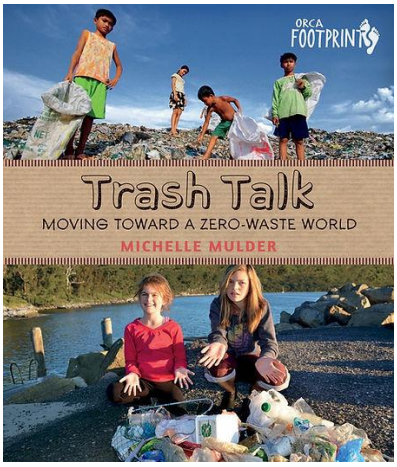
Idea 2 - Create own images that are key for the local community your school is situated in. Teachers can engage pupils and their parents and/or collaborate with other teachers.

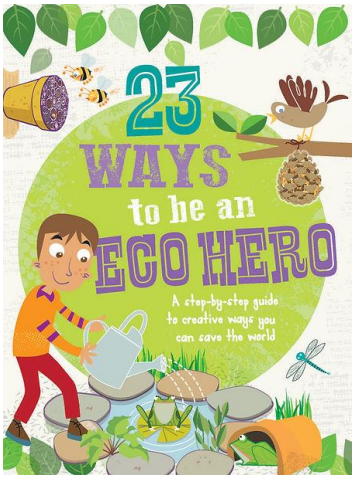
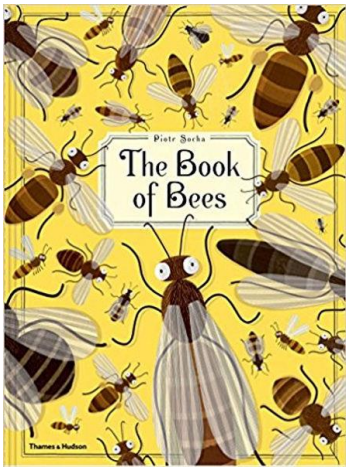
You can ask students to make photos on their way to the school mapping key hot issues related to environment.

Watching video materials related to green topics is another approach to utilize visuals in building awareness and motivation among pupils for proactive action in taking care of environment. There are numerous international organisations providing high quality videos for teachers to embed in their practice. Some of these videos are presented below:

- A Plastic Ocean - presents the global effects of plastic pollution and highlights workable technologies and innovative solutions that everyone - from governments to individuals - can do, to create a cleaner and greener ocean. Teachers can organise movie screenings. For more information: https://www.aplasticocean.movie/
- A Plastic Ocean movie - version for kids. The video clip is available for open use: https://www.youtube.com/watch?v=3EgyvqMXODc
- A future without waste - a video part of a course for children developed by Lego foundation and educational professionals. Available here: https://www.lego.com/cdn/cs/sustainability/assets/bltbc89249d0dcf633f/1_future_without_waste_EN.mp4?CMP=LCE&fbclid=IwAR2v1lKjy-RudO3hLPKEVHGdGgpbVvFp54C2FOQ3r0Q5L56R2KqOd5tWLgg
- Why walking is better than driving - a kid's rap song about benefits of walking to school instead of driving. Available here: https://www.greenninja.org/Green_Ninja_Show/83

Encouraging pupils to read thematic books can nurture their ecological consciousness. Amy French have collected a list of Zero Waste, Eco-Friendly and Sustainability Books for Kids and Teens that use as a starting point for teachers to curate their own reading recommendations. Some of the books are presented below (The Good Life with Amy French, 2018).

		
Ella Diaries: Going Green - covers many of the issues of recycling, compost and general trash.	**The Lorax** - conveys deep message of how important it is to take care of the planet and how serious impacts our modern lifestyle has on the planet.	**Trash Talk: Moving Towards a Zero-Waste World** - how people around the world turn trash into useful items through creativity, and sometimes necessity.

		.
23 Ways to Be an Eco Hero - reusing and recycling craft ideas with step-by-step instructions ranging from simple to complex projects.	**The Book of Bees** - how honey is made, the significance of the bee dance, important flowers, and the difference between ancient and modern beekeeping techniques.	

The above list is indicative and aims to inspire teachers in making their own collection from book in their national context.

Project based learning

Teachers can engage learners in diverse project-based learning activities, which help them muster all elements of their green competences in terms of knowledge, skills and attitudes. One approach is to use existing methodology for school context and employ it for green education purposes.

Example for such methodology is Design for Change, which proposes a 4-step methodology for implementation.

- Step 1 (Feel) is about pupils to walk around and observe how they feel about their environment and spot issues that bother them. For example, smoke in the air, dirty cars, dirty sidewalk, etc. They come to the classroom with their observations and full of emotions. In small group discussions and then with the whole class they reach a consensus on which is their common challenge.
- Step 2 (Imagine) is about pupils defining how they wants things to improve and to express their vision of their positive change. Furthermore, this is the step where they make visual representations of their ideas for a solution they propose. In this step, teachers give space for creativity and provide support on topics they don't know but have identified as important for solving the challenge. For example, they make a paper model of a green schoolyard.

- Step 3 (Do) is about pupils trying to implement their solution. Here, the teachers might be more active in supporting them with information, materials and if needed in the communication with staff members of the school, etc.
- Step 4 (Share) is about sharing success with others. Pupils prepare different forms of presentations (oral, visual, performance, etc.) and present these in front of pupils from other classes, parents and other linked groups of persons with the problem tackled. The idea is to inspire others for positive change.

During all steps, teachers encourage pupils to talk as many persons as possible about the problem and the solution they focus on and seek a lot of information in order to create a really good result.

On the website of Design for Change Network there are examples for more than 50 countries on the implementation of this methodology, which is essentially a student-driven learning process, For more information: https://www.dfcworld.org/SITE

In order to ensure quality project-based learning experience teachers can utilize powerful questions. Asking pupils thought provoking questions can help them reach deeper realisation of their interaction with nature, the impact of human behaviours and possible positive solutions.

Sample questions teachers can use in their teaching on green topicsж:

- Are energy-saving light bulbs more sustainable than conventional light bulbs? (Wals, 2016)
- What plastic items did you use today? Which of them takes the longest to decompose?(EU Academy, 2022)
- Where is the energy for your phone coming from?

Game based learning

There are wide range of games teachers can use in their green education activities to spark pupils' interest and motivation on green topics. Some examples are presented below (adapted from Kochrekar, 2022):

- **Plastic Bottles Bowling**: invite each pupil to bring couple of plastic bottles and a small lightweight ball. Emphasise in the beginning of the game that plastic bottles can be reused in different forms and now they will use them to create their own bowling game. Following, invite them to fill the bottles with sand, so that they are stand tall. There are different options here of decorating the bottles, but the simpler design, the more environmentally friendly. Pupils can split in small groups and each group orders their own bowling alley. The activity can be conducted outdoors, as well.

- **Trash Hunt:** invite pupils to find recyclable items. You can set a time for the activity and/or a list of items to search for. You can bring a pile of recyclable items and ask them to sort them out, as well. The game helps them to understand what can be recycled but will also make them consider things that may not have actually been recyclable.

- **Classroom Pollution:** during lunch break, when pupils are not in the classroom, try to "pollute" the classroom by making a total mess, putting objects on the floor, putting chairs up and down. When pupils come, tell them they have 15 mins to clean up. At the end make a short reflection on the fact that one person can make a total mess for a short time and so

many efforts are needed (15 mins x 25 pupils) to take care of this "pollution".

- **Tower of Cans:** ask pupils to bring used aluminium cans. Divided them in small teams and distribute the collected cans equally. In 2 mins, they have to build towers of cans. The winner is the team with the tallest tower standing.
- **Recycle - Reuse - Landfill Race**: Teacher prepares 3 labelled boxes: 1. Reuse; 2. Recycle; 3. Landfill. In addition, one big box with mixed garbage (containing all kind of reusable, recyclable and simply landfill trash). The boxes are placed at the finish line of an improvised race track.

The Reuse box is placed the closest; the Recycling Box midway, and the Landfill - furthest away. The playing teams have to figure out what they have to do with each item and then run and place it in the appropriate box.

The game conveys the idea that reusing is cheaper and requires lesser resources than recycling. Recycling, on the other hand, uses fewer resources than land filling. At the end of the game, teacher reviews each item in the boxes. The team members have to explain how they would reuse an item in the reuse box.

Outdoors learning activities

The most effective way to establish connection with nature is to engage learners in direct communication/interaction with it. There are wide range of possibilities in this context.

Idea 1 - Field visits. These visits aim to provide opportunity for direct observation of environment in all its forms, including sites where the negative impact from human activities is strongly visible. Two variations can be presented:

- Greenlets. Teachers can organise regular and frequent walks in nature. This is dependent on the location of the school, but for schools which have near access to a park or some other green area, this can be organised as a short, but regular tradition. During these walks in nature,

teachers can prepare some additional activities or simply leave pupils to enjoy sometime in the open air. In order to have a learning effect, teachers can introduce short reflection rounds to emphasise on the treasures that we receive from nature and our responsibility to give back. A longer Greenlet can include taking pupils on a short trip to a protected area, so that they fully understand and experience clean nature.

- Garbage site. Teachers can organise a small visit to a local landfill, where pupils can see huge amounts of waste in reality. In such way, they can witness by themselves the result of human activities. Experiencing

waste in such a direct manner is the first step to building responsible behaviours.

Idea 2 - Green missions. These missions can take diverse forms of trash cleaning of the environment in the school yard and other external areas to creating and hanging feeding cans for birds. These can be also observational tasks, e.g. counting the number of birds in town (pigeons, sparrows). Teachers can join with their class in different initiatives, dedicated to environmental protections. For example, the World Cleanup Day, which is the largest worldwide clean-up event of the year. For more information: www.worldcleanupday.org

Idea 3 - Green gardens. With the support of school administration, a space for gardening can be dedicated in the schoolyard. Together with pupils, teachers can plan and implement creation of a real garden. Depending on the choice it can be only with flowers or include vegetables and other plants. The idea of green gardens is that they encourage pupils to take long-term care. It also demonstrates the principles of organic gardening and its importance for people's health and wellbeing.

Idea 4 - Green camps. Camps provide opportunity for teachers and pupils for a longer and deeper interaction with nature. They can be planned during spring or summer breaks. In organising this activity, teachers can collaborate with green NGOs and organisations with suitable camping sides and programmes, tailored to different age groups. Several examples of such organisations: Bikearea - Bulgaria, https://kids.bikearea.org/; Vlahi "Nature school" - Bulgaria, http://vlahi.org/en/; Children's environmental academy - Serbia, https://deakademija.com/; Dreams for Life - Romania, https://dreamsforlife.ro/ .

Idea 5 - Experiments like decaying tests. At a dedicated spot in the school yard, pupils burry organic and plastic waste and have the task to monitor how fast are the different types of waste decaying. In a few weeks' time, the teachers

encourage reflection that plastic takes basically centuries to dissolve if we throw it on the ground.

External speakers

Professionals from the outside world can inspire children to embrace the green mindset. There are numerous organisations that are dedicated to protection and sustaining of environment, who are eager to share their knowledge to wide audiences.

In some schools it is a common practice to invite eco-activists, staff members of forest protection agencies and other state/municipal environmental units to talk about nature in front of pupils and “contaminate” them with their devotion and persistence. Usually, these visits are episodical and for short periods of time. Teachers might consider turning this into an ongoing interaction and ensuring opportunities for longer communication on green topics between these professionals and children.

The interaction with external professionals can be utilized to engage students in different discussions and exploration activities. One example can be the topic related to “history of stuff” (Furger, 2007). By tracing the origins of everyday products like bikes they ride to school or their favourite sneakers, students develop an understanding of the impact that the production, sale, and disposal of commonly used goods have on the environment. The external

speaker can direct their attention on finding alternatives in their consumption patterns. For example, wearing shoes until they're outgrown or worn out.

Further inspiration

There are diverse organisations on global scale aiming to support ecological education in schools and provide databases with resources that can serve teachers in further tailoring their learning process to the individual contexts for their classrooms. Following are some examples of such platforms:

- SUBJECT to CLIMATE - is a platform providing structured database with resources that can be used in the classroom. The methodological descriptions are US educational standards, but they are valid for other

educational systems, as well. For more information: https://subjecttoclimate.org/search

- CENTER for Ecoliteracy - provides high-quality lessons and materials in providing ecological education. For more information: https://www.ecoliteracy.org/ecological-education
- THE GLOBE PROGRAMME - provides tailored lesson plans and resources for elementary education. For more information: https://www.globe.gov/web/elementary-globe
- GLOBAL TEACHING INSIGHTS - a joint initiative of OECD, UNESCO and Education International. There is a dedicated focus on Climate Action with 41 videos of teachers sharing their ideas on climate education. For more information: https://www.globalteachinginsights.org/channel/Climate+Action/212779523

Chapter 3 - Training of Primary Teachers in Green Education

Based on the findings presented in Chapters 1 and 2, this chapter provides a detailed account of the methodological framework for a training course tailored to the needs of primary teachers in the area of green education. The presented framework has been pilot-tested in training courses with primary teachers from Romania, Bulgaria, and Serbia, and the feedback received from the participants has been carefully analyzed.

This chapter not only offers a comprehensive description of the pilot-training approach but also provides a critical evaluation of the key findings, offering valuable insights for improving the training delivery in the future. By offering a structured approach to training for primary teachers, this chapter aims to support the development of green education programs in primary schools, and to contribute to a more sustainable and environmentally conscious future.

Methodological framework of a training course for primary teachers in green education

Review of national contexts evidenced that a feasible format of training to provide to primary teachers in order for them to be introduced to the concept of green education and consequently embed their own green education activities in the classroom is an 8-hour qualification course with follow-up mentoring support by trainers. The physical training should be accompanied

with relevant materials to support self-paced work of teachers in crafting their own green education activities.

Stepping on these premises the following structure of a training process was developed.

Preparation for the training

All primary teachers - participants receive prior the training short information on learning objectives and the value to join the training. They also receive a short evaluation form to map their baseline level with regard to the topic of the future training. Depending on the concrete context the evaluation can be implemented withing the training process, as well.

Draft agenda of the training

The following agenda is designed for an 8-hour training process in the time frame of 09:00 to 17:00.

09:00 - 09:30 Welcome and warm-up session. The trainer makes a quick introduction to the training and its objectives. The trainer can choose a warm-up session of one's own preference, but in the context of green education, it can be also linked to the green topic. For example, "Present yourself in short by telling what your favourite moments are when you are out somewhere in nature".

09:30 - 10:30 What are the new green topics we should embed in primary education? In this session (mainly informational) trainer provides overview of the new topics emerging in the field of ecological/green education. Here, there can be a strong emphasis on EU Green Competences Framework, on the topics related to Circular Economy. It can also emphasise on the key aspects like: Love Nature, Care for Nature, Zero Waste. When we talk about nature we consider animals as integral part of it, so depending on teachers' liking these topics can be taught from this perspective.

10:30 - 11:00 Green break. During the break trainers can invite participants to make their own tea and coffee by using only non-plastic tools and materials. A short reflection on what can we do in our school environment to encourage children not to use plastic by our own example, etc.

11:00 - 12:30 What are the effective methods/activities to nurture green competences in primary education? The trainer makes a clear statement that there are a lot of good practices already in place when we talk about green/ecological education. There are thematic lessons in textbooks, etc. What we would like to encourage primary teachers are a couple of areas they can further explore. For example:

- Inside the classroom: Daily rituals; Thematic movies; Greenshops (project-based learning workshops during which children work on

ecological topics - reading, writing, drawing, modelling); Green speakers (professionals from the outside world that can inspire children to embrace the green mindset)

- Outside the classroom: Green trips in nature to recognise what authentic nature means and compare with what is it when people harm it; Green missions, which are linked with the Greenshops and are linked to children's action to support nature (e.g., cleaning the school yard, planting and taking care of trees, etc.)

If time allows short outline of interesting ideas to measure learning outcomes, when talking about green competences.

The key element in this part is to question teachers' attitude that "they are already doing the things propose" and encourage them to understand the importance of how you do it and the invisible but essential details.

12:30 - 13:30 Green lunch

13:30 - 15:30 Teachers' green lab - developing activities. Trainer facilitates creative workshop for teachers with the aim to choose and design the green practices they will experiment with during the piloting phase. They also design the way learning progress and achievements of pupils will be measured. Teachers can be split in small teams of 2-3. Each team can take as a working field one of the grade levels - 1st grade, 2nd grade, 3rd grade, 4th grade. This will

contribute to creating activities for all grades at primary education level. They can use an indicative framework to describe their activities.

Trainer presents the framework and makes a short discussion on its elements:

- Name of activity
- Learning objectives
- Learning outcomes
- Duration
- Resources/materials needed
- Learning setting requirements (outdoors, indoors; space organisation)
- Description (step by step instructions with timing)
- Evaluation of learning
- Link to educational curriculum
- Link to subjects

15:30 - 16:00 Green break

16:00 - 17:00 Teachers green lab - presenting results. Each team presents ideas developed and receives feedback from the other teachers with the aim to make them very concrete and almost ready to implement.

17:00 - 17:30 Feedback forms/evaluation of the training and closing with a ritual emphasising on our interconnectedness and link with nature/planet.

Follow-up support and other activities

Trainer sends a follow-up e-mail to teachers with an open invitation to stay in contact during the process of embedding green education activities developed during the training. From this moment on, the trainer adopts the role of a mentor.

Following implementation in the classroom, the mentor invites each teacher to complete evaluation report in order to map main achievements, but also areas of improvement.

Analysis of pilot training of primary teachers

This section describes the testing and evaluation of the presented training methodology in the context of primary education, specifically in Romania, Bulgaria, and Serbia. The purpose of this study was to examine the usefulness of the training for primary teachers in their horizontal task of introducing green education in their respective educational contexts. The evaluation focused on assessing the effectiveness and practicality of the training methodology, with the aim of making improvements to its delivery in the future.

Scope of piloting

The initial planning was to have 15 primary teachers per country (45 in total) to take part in the pilot training. This target was overreached due to the high interest for participation. The total number of teachers to participate in the pilot training were 62 (Bulgaria - 16; Romania - 35; Serbia -11).

In Bulgaria all participating teacher were trained in a 1-day training format, as initially planned. In Romania, teachers were trained in 3 groups in order to keep the initial number of participant adequate for this type of training (around 12-15 participants).

Majority of teachers were from primary education level, but in some countries such as Romania there were also teachers from kindergartens, which creates

opportunity to explore the opportunities for embedding green education in preschool age.

Implementation of piloting

Each pilot partner appointed trainers with experience in teacher trainings to deliver pilot training on the basis of presented methodology. The trainings were conducted in the respective national languages to guarantee effectiveness of the learning process. A common agreement was reached to follow training framework, keeping the introduction of new elements to the minimum.

In order to ensure common approach, each trainer received a set of materials to be able to craft their training design such as: selected texts for green topics and methods from current publication; sample PowerPoint presentation; green learning activities description template; evaluation forms and template for teacher reports after implementing these activities in their practice.

Following the training each partnering organisation provided a national evaluation report to the training coordinator from the leading organisation (Bulgarian Union of Teachers).

Evaluation of piloting

Participating teachers were invited to fill in entry and exit evaluation forms based on a set of statements. For each statement, they were asked to rate their level of agreement from 1 to 10 (Likert scale).

Both forms contained one and the same set of 6 statements, as follows:

I am aware of new topics (green competences) and ideas in the field of ecological education
I use this information to update my teaching content regularly
I know and use diverse methods to teach green topics
I can design my own methods and green learning activities
My pupils are fully engaged when I teach them green topics
As a result of my work with pupils on green topics, they demonstrate better understanding and responsible behaviour towards environment

In the exit form, an extra statement was added to check their feedback on the quality of the training ("The training was well organised. The information presented was clear and useful.").

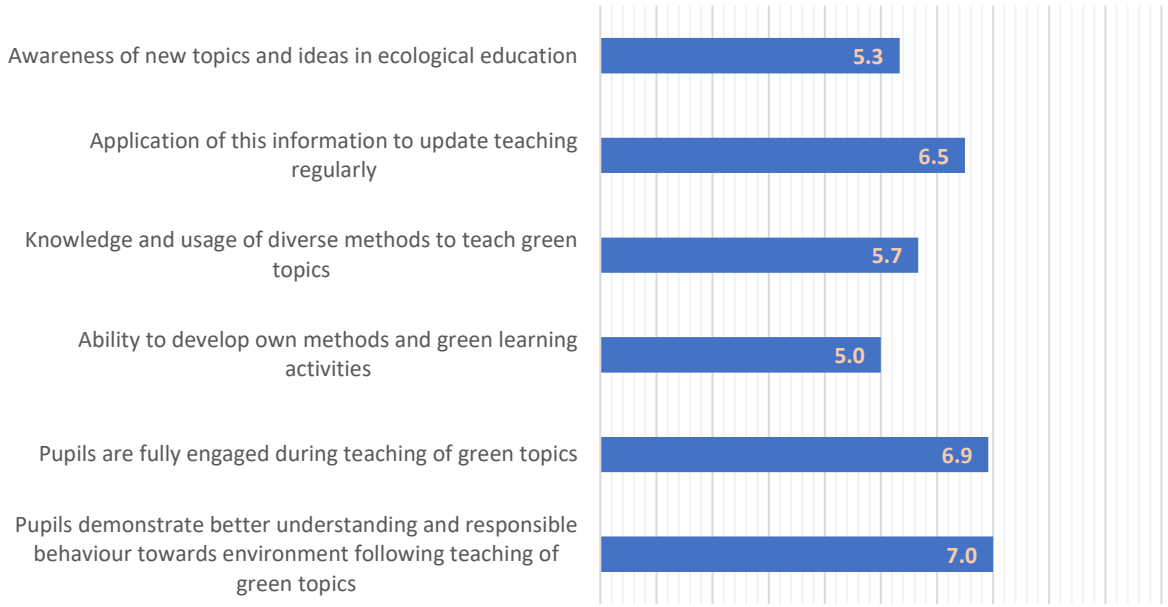
Key findings

The findings for each country are based on the analysis of entry and exit evaluation forms, but also from each partner's observation, presented in their national reports submitted to the piloting coordinators.

Bulgaria

The entry evaluation form was completed by 12 out of 16 participants. The summary of results can be visualised with the following graph.

Fig. 1 - Entry level of teachers in pilot training - Bulgaria (average values)

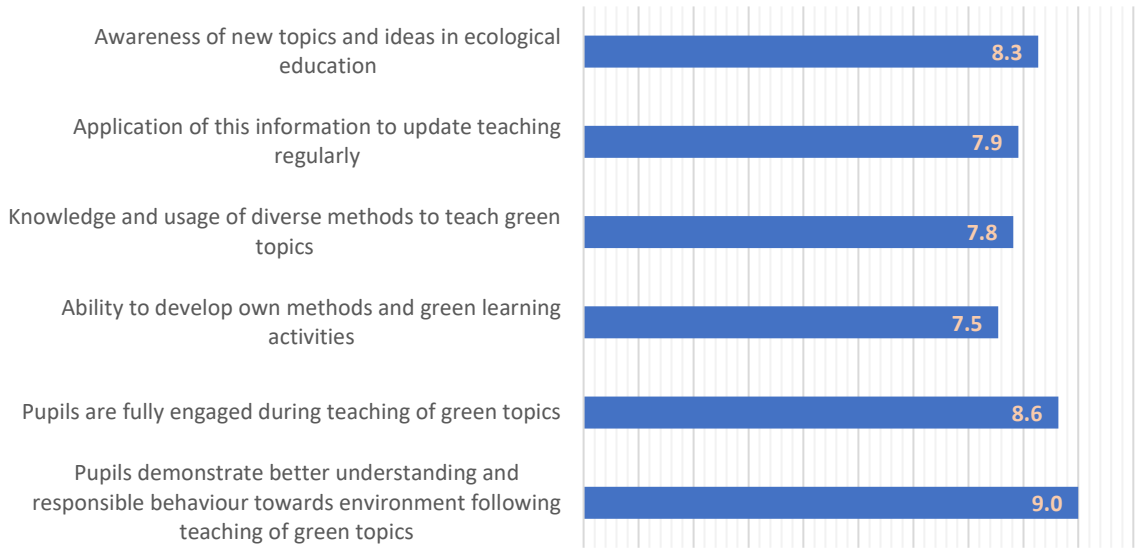


The initial findings demonstrate that primary school teachers' awareness of new topics and ideas in green education, as well as their capacity to develop personalized approaches for green education, were initially rated low.

However, the high levels of engagement and demonstrated better understanding and responsible behavior towards the environment among students as a result of teachers' green education initiatives suggest a promising indication of students' overall interest and positive reception towards future green learning activities.

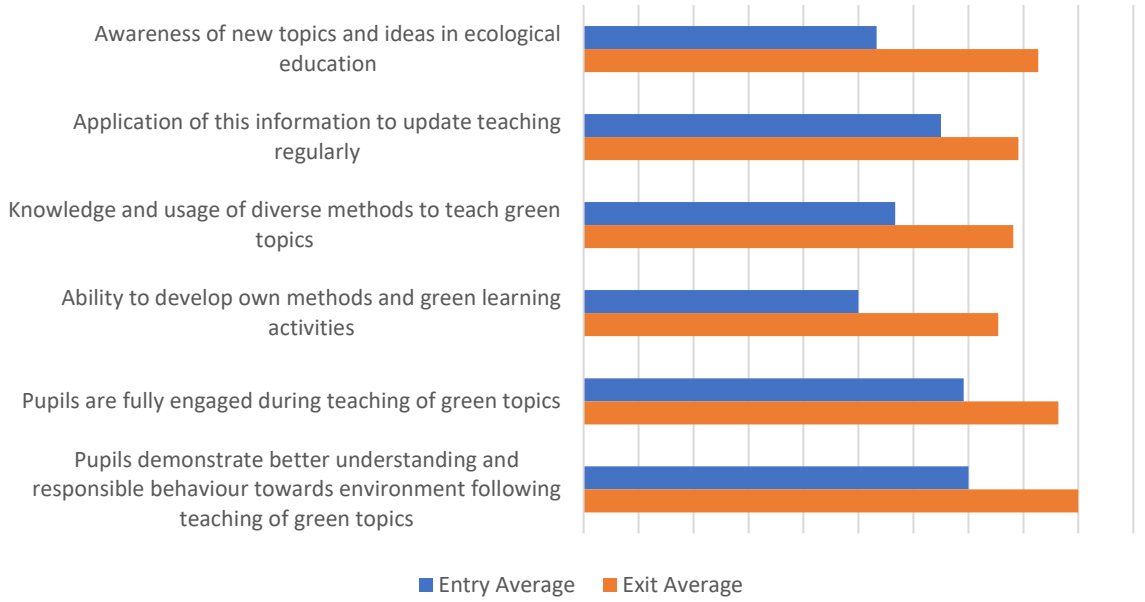
Following the pilot training there is a noticeable increase in the rating under each of the six categories. The values for the two lowest categories identified in the entry evaluation increased with more than 50%, which is a significant outcome.

Fig. 2 - Exit level of teachers in pilot training - Bulgaria (average values)



The concrete progress for each category from entry to exit level can be further visualised with the following comparative graphic.

Fig. 3 - Comparisson between entry and exit levels of teachers in pilot training - Bulgaria

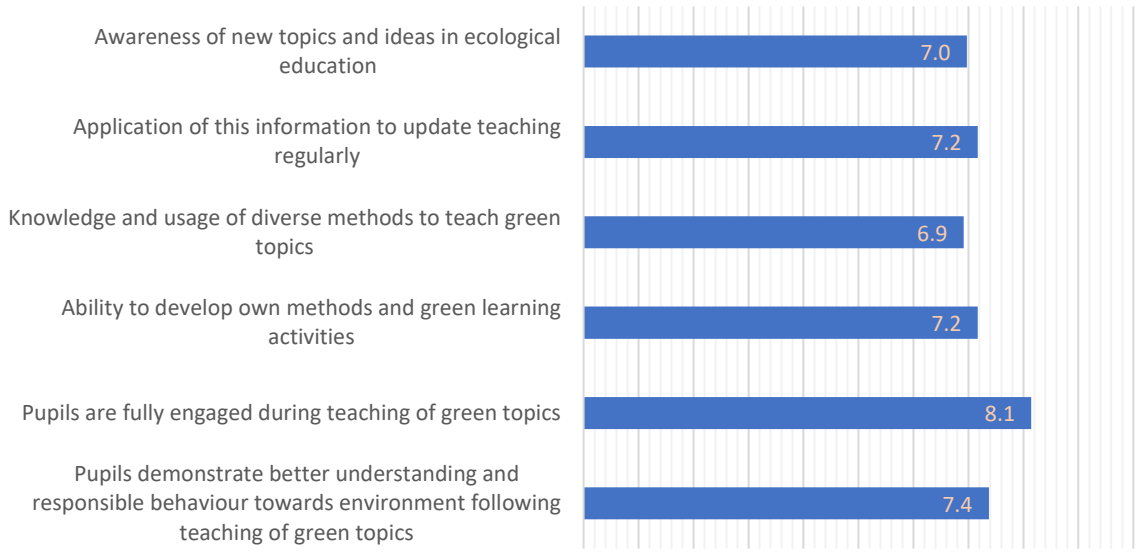


It is positive to observe that the training contributed to an increased self-evaluation of teachers, which is balanced across the categories rated. Along with quantified evaluation, some teachers provided additional feedback for the training, confirming its usefulness and practicality. The overall impression of this feedback is that teachers are motivated to embed further green education in their practice.

Romania

The entry evaluation form was completed by all 35 participants, trained in three groups. The summary of results can be visualised with the following graph.

Fig. 4 - Entry level of teachers in pilot training - Romania (average values)

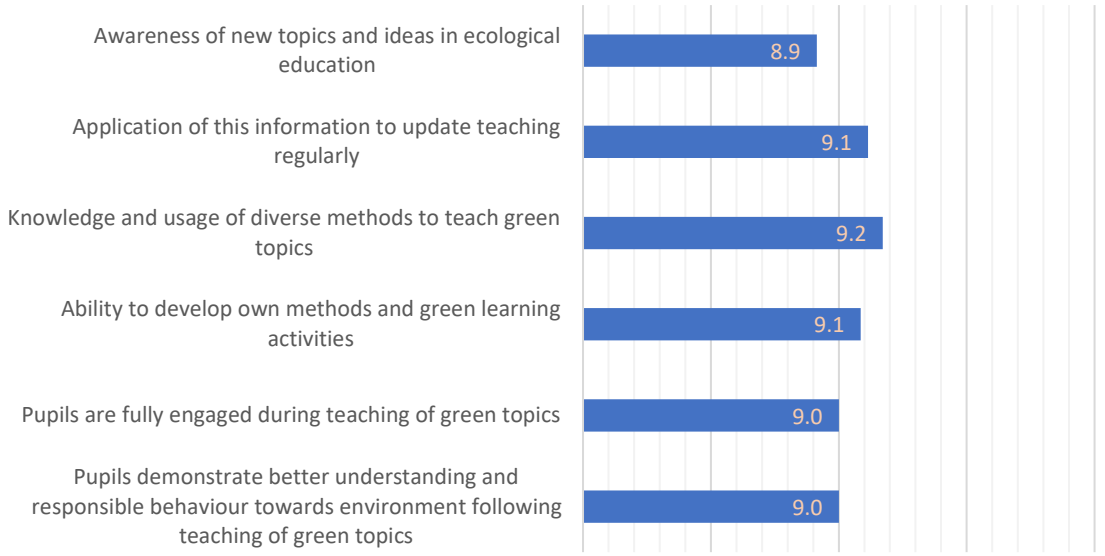


The initial findings demonstrate that primary school teachers' evaluation of their awareness of new topics and ideas in green education, as well as their capacity to develop personalized approaches for green education are higher (around 7 out of 10) in comparison with their Bulgarian colleagues. Still the

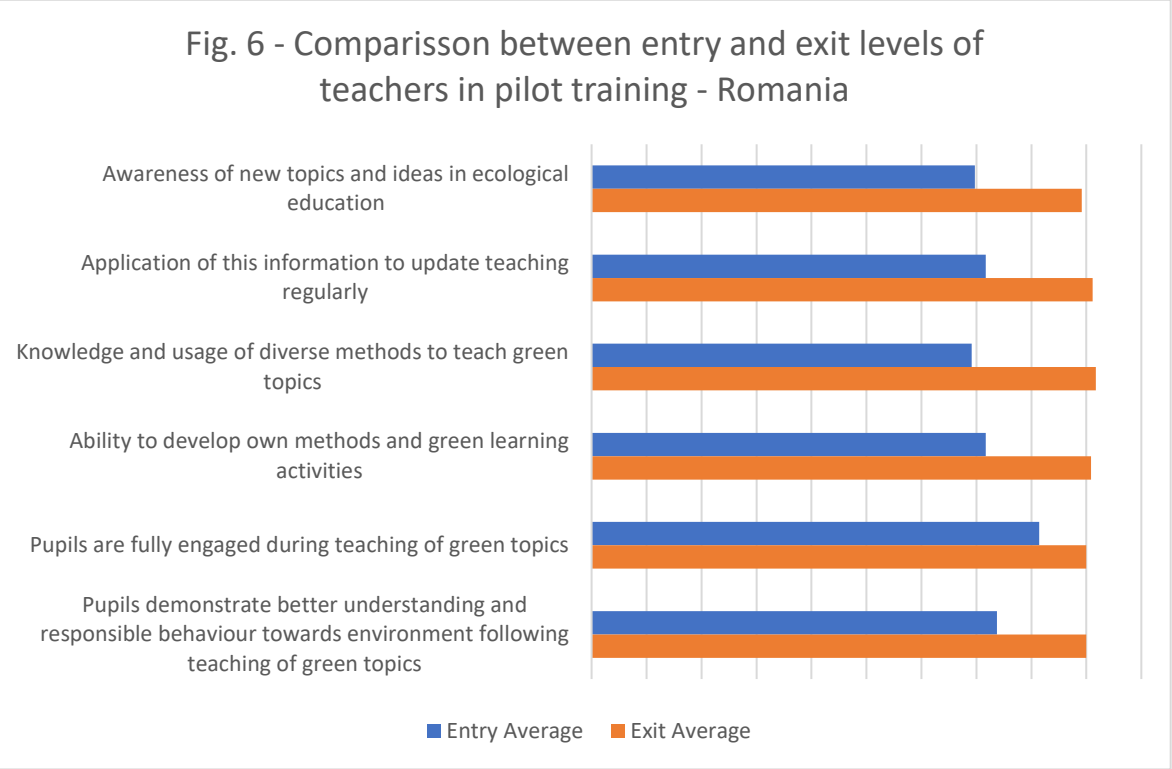
levels of pupil's engagement, better understanding and responsible behaviour following their teachers' training are at the same levels for both countries.

Following the pilot training there is an increase in the rating under each of the six categories with majority of average values reaching ranging between 9-10, which are the maximum values.

Fig. 5 - Exit level of teachers in pilot training - Romania (average values)



The concrete progress for each category from entry to exit level can be further visualised with the following comparative graphic.



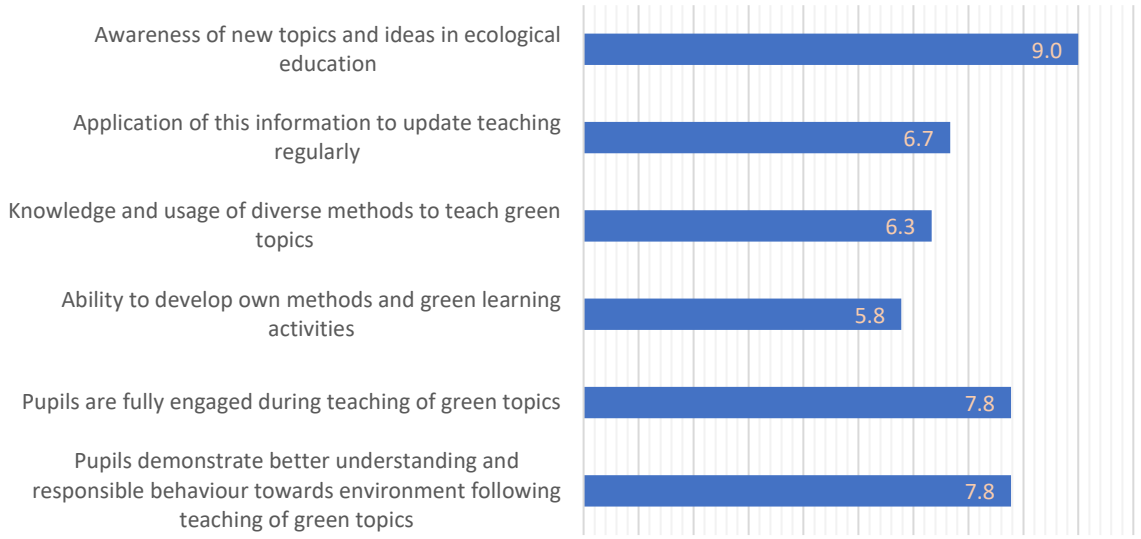
The results demonstrate a positive impact of the training program on teachers' self-evaluation, as evidenced by a notable increase in ratings across five of the six categories, exceeding 25%.

Along with quantified evaluation, some teachers provided additional feedback for the training, confirming its benefits for pupils.

Serbia

The entry evaluation form was completed by 9 out of 11 participants. The summary of results can be visualised with the following graph.

Fig. 7 - Entry level of teachers in pilot training - Serbia (average values)



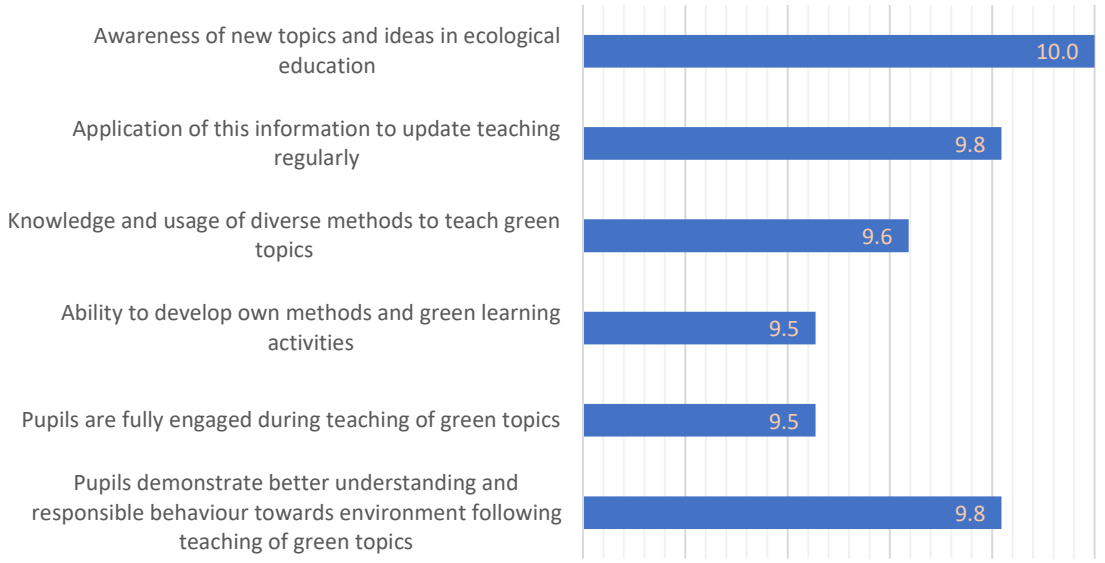
The initial findings demonstrate that primary school teachers' awareness of new topics and ideas in green education is rated as very high. At the same time, teachers are not so categoric with regard to embedding this awareness into their daily practice.

Furthermore, it seems that they are not so confident in terms of methods to teach green topics and crafting their own green learning activities. Similarly, to other countries, teachers consider the effects from their teaching as impactful.

Following the pilot training there is a noticeable increase in the rating under each of the six categories, including ones rated with lowest marks at entry

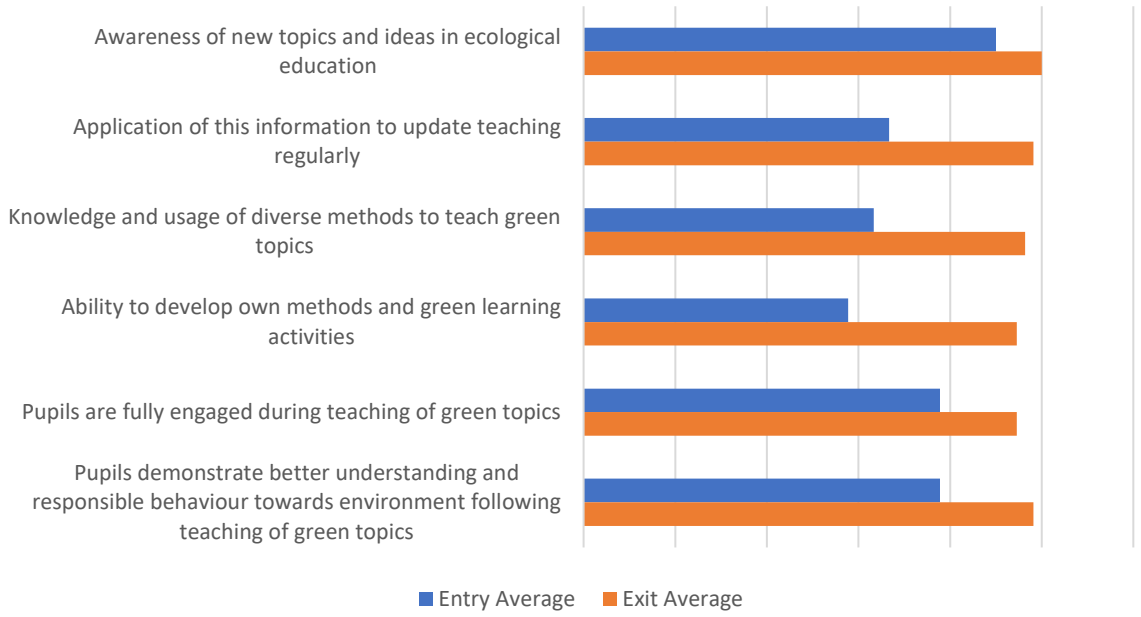
level. For areas related to methods in green education and crafting green learning activities, there is an increase with more than 50%.

Fig. 8 - Exit level of teachers in pilot training - Serbia (average values)



The concrete progress for each category from entry to exit level can be further visualised with the following comparative graphic.

Fig. 9 - Comparisson between entry and exit levels of teachers in pilot training - Serbia



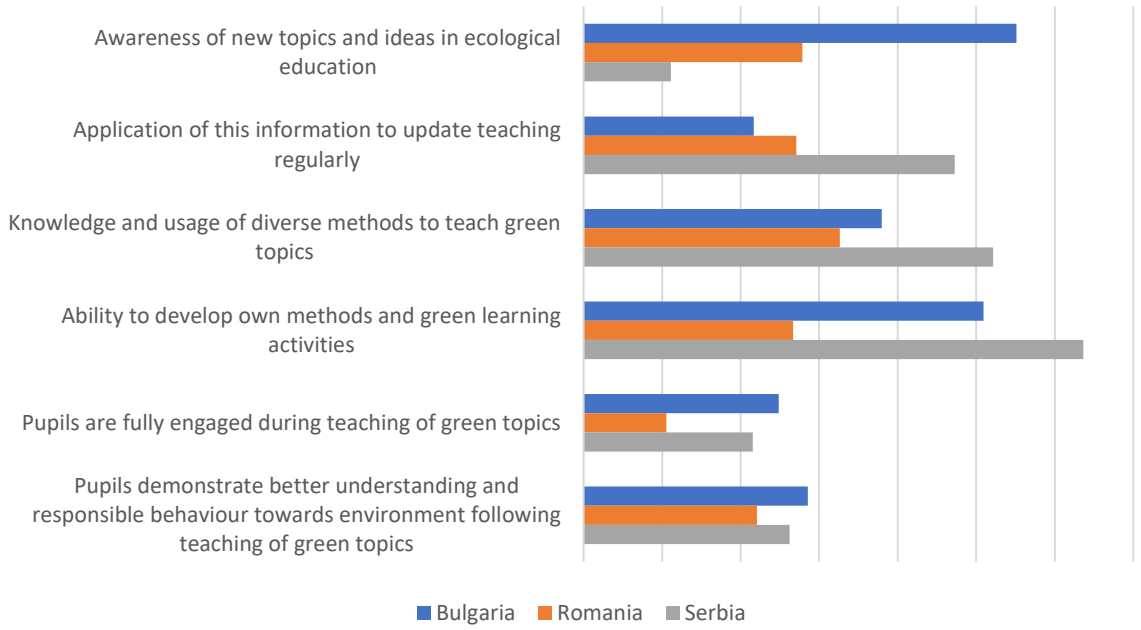
The results demonstrate a positive impact of the training program on teachers' self-evaluation across all areas. Even in the first areas, which was highly rated at entry level there is an increase of 10%. The training seems to boost teachers' confidence in developing their own learning activities, which is evidenced by the highest increase in rating with more than 60%.

Cross-country comparison

The pilot training in all countries resulted to increased positive evaluation in each country. The below graphic visualises a comparative perspective on the

average levels of progress argued by teachers as a result of their engagement in training.

Fig. 10 - Countries Progress Comparrison (average values, %)



Serbia had the highest score in the first category - Awareness of new topics and ideas in ecological education, with over half of the teachers reporting an increased awareness. Bulgaria had a moderate score, while Romania had the lowest. In the next category - Application of this information to update teaching regularly - Serbia also had the highest score, with almost half of the teachers reporting an increase in applying new information to their teaching.

Bulgaria and Romania had lower scores, with less than a third of teachers reporting an increase.

For the categories - Knowledge and usage of diverse methods to teach green topics; Ability to develop own methods and green learning activities and Pupils demonstrate better understanding and responsible behaviour towards environment following teaching of green topics - Serbia had the highest score again, with over half of teachers reporting an increase in their knowledge and usage of diverse teaching methods and over 60% of teachers reporting an increase in their ability to develop their own green teaching methods and activities. Bulgaria and Romania had moderate scores of increase.

Overall, Serbia seems to have had the most positive results across all categories, while Bulgaria had some positive results in the categories related to pupil engagement. Romania had the lowest scores across most categories.

Conclusions and recommendations

Based on the above findings, several main conclusions and recommendations for further discussion or steps in the field of training primary education teachers in green education can be proposed, as follows:

1. Primary school teachers' awareness of new topics and ideas in green education and their capacity to develop green learning activities vary

across countries. Therefore, it is essential to tailor training programs to the specific needs and contexts of each country.

2. The pilot training program had a positive impact on teachers' self-evaluation in all countries (Bulgaria, Romania and Serbia), resulting in increased levels of knowledge, usage of diverse methods to teach green topics, and ability to develop their own green learning activities. Therefore, it is crucial to provide ongoing training and support to help teachers further develop their skills and confidence in teaching green topics.
3. While some countries showed more significant progress than others, all countries demonstrated a positive impact on pupil engagement, better understanding, and responsible behavior towards the environment following their teachers' green education initiatives both during entry and exit evaluation. Therefore, it is vital to continue investing in green education initiatives and to provide teachers with the necessary resources and support to implement them.
4. It is encouraging to note that teachers in all countries expressed motivation to embed further green education into their practice. Therefore, it is essential to provide teachers with opportunities to collaborate and share best practices to help them build a supportive network and develop new ideas for green education initiatives.

5. It is important to note that the evaluation results are based on self-evaluations from the teachers, and further research could explore these findings in more detail. Therefore, it is recommended to conduct more comprehensive evaluations and gather feedback from other stakeholders, such as students, parents, and school administrators, to gain a more comprehensive understanding of the impact of green education initiatives in primary schools.

Chapter 4 - Embracing Green Schools Model

This final chapter aims to emphasize the significance of adopting a whole-school approach to green education, urging school principals to take steps towards transforming their institutions into green schools. The chapter global trends, models and recommendations for stakeholders in the education field interested in promoting and integrating the green schools concept.

European and international trends

Academics like Arjen Wals, Professor of Transformative Learning for Socio-Ecological Sustainability at Wageningen University, have been prominent voices for the last years of the need to move towards serious reform, when addressing the role of schools as green education providers (Wals, 2022).

Professor Wals highlights the complexity of sustainability issues and emphasizes the need for education to address this complexity. He suggests that schools should adopt a whole-school approach to sustainability, which involves integrating sustainability principles throughout the entire school organization and the broader community. This approach allows for a systemic and holistic embedding of sustainability, enabling policymakers and the school community to work together towards sustainable practices.

One important aspect of this approach is granting teachers and students the freedom to learn and experiment, free from rigidly prescribed curricula and

exams. This freedom enables teaching to be more responsive to the lifeworld of learners, including their concerns and interests. By allowing flexibility in the learning process, education can better reflect the real-world challenges and issues related to sustainability.

In essence, the whole-school approach to sustainability promotes a comprehensive and integrated understanding of sustainability principles and practices. It encourages active participation from all stakeholders, including students, teachers, school leadership, and policymakers. By embracing this approach, schools can create an environment that nurtures creativity, critical thinking, and innovation, empowering students to become active agents of change in creating a more sustainable future.

The whole-school approach is supported by the European Union in the 2022 Council Recommendation on learning for environmental sustainability (Council of the European Union, 2022). EU member states are invited to encourage and facilitate effective whole-institution approaches to sustainability. These approaches encompass:

- teaching and learning;
- vision, planning and governance;
- involvement of learners, staff and families;
- management of buildings and resources;

- partnerships with local and wider communities; and research and innovation.

School education leaders play key role in triggering organizational change linked to implementing embedding sustainability in existing processes and measures. A key aspect in implementing sustainability strategies is linked to prompting partnerships with wide range of actors, including business, the arts, farms, cultural heritage, sport, youth, research institutes, civil society organisations, the educational resources industry (including technology, publishing and other curriculum equipment) and educational research.

Green schools programme in Ireland

Green Schools is an environmental education and management program implemented in Ireland to promote sustainable practices and raise awareness among students, teachers, and the wider school community (Green Schools Ireland, 2023). The program, initiated by the Environmental Education Unit of An Taisce (The National Trust for Ireland), aims to empower young people to act and become environmentally responsible citizens.

The Green Schools model follows a structured and step-by-step approach, which involves several key elements:

- Seven Steps: The program consists of seven steps, each focusing on a specific theme of sustainability, including litter and waste, energy, water,

travel, biodiversity, global citizenship, and climate action. Schools progress through these steps, implementing actions and initiatives related to each theme.

- Environmental Reviews: Participating schools conduct environmental reviews to assess their current practices and identify areas for improvement. This process helps schools understand their environmental impact and set targets for positive change.
- Action Plan: Based on the environmental review, schools develop an action plan that outlines specific targets and actions to be undertaken. This plan guides the implementation of sustainability initiatives within the school.
- Student Involvement: The Green Schools program places significant emphasis on student involvement and empowerment. Students are encouraged to take an active role in decision-making, planning, and implementing sustainable actions within their school and wider community.
- Curriculum Integration: The program encourages the integration of sustainability principles into the curriculum, ensuring that environmental education is embedded across various subject areas. This integration helps students understand the relevance and importance of sustainability in their daily lives.

- Community Engagement: Green Schools promotes engagement with the wider community to foster sustainable practices beyond the school premises. Schools collaborate with local authorities, businesses, and community groups to raise awareness, share best practices, and create a broader impact.
- Assessments and Awards: As schools progress through the program, they undergo assessments to evaluate their efforts and adherence to sustainability criteria. Successful schools receive Green Flags, which are awarded as recognition of their commitment to environmental sustainability.

The Green Schools model in Ireland has been highly successful, with thousands of schools actively participating and making significant environmental improvements. It has contributed to reduced waste generation, improved energy efficiency, increased awareness of environmental issues, and enhanced student engagement and leadership.

Overall, the Green Schools model in Ireland provides a comprehensive framework for schools to embrace sustainability, integrate it into their culture and curriculum, and empower students to be environmentally responsible citizens. By nurturing a sense of environmental stewardship, the program is shaping future generations who are conscious of their impact on the planet and equipped to make positive changes for a sustainable future.

Additional recommendations for school leaders

The primary aim of the desk research conducted in the domain of whole-school approaches for cultivating a green mindset in future generations was to aggregate a collection of practical recommendations tailored for school leaders. These recommendations are intended to assist school leadership teams in becoming exemplars of environmentally conscious institutions. The subsequent list provided herein is merely suggestive in nature and can serve as a source of inspiration for customized solutions within specific organizational contexts:

1. Prominently displaying data on water usage, air quality, food consumption, and waste:
    a. Install visible displays or dashboards in common areas of the school, such as corridors or the cafeteria, showcasing real-time or periodic data on water consumption, air quality measurements, food waste amounts, and other relevant sustainability metrics.
    b. Integrate this data into STEM (Science, Technology, Engineering, and Mathematics) classes as practical examples for students to analyze and discuss. Encourage teachers to incorporate these data points into their lesson plans.
2. Organizing competitions or exhibitions to showcase and improve sustainability practices:

a. Plan and execute competitions among students or classes that encourage the development and implementation of sustainable practices within the school environment.
b. Host exhibitions or events where students can display their projects or initiatives related to sustainability. This can include presentations, posters, models, or interactive demonstrations.
c. Collaborate with neighboring schools to organize joint events or competitions, fostering a sense of camaraderie and healthy competition around sustainability practices.

3. Creating micro-economies for sustainability projects:
    a. Identify suitable sustainability projects that can generate economic value within the school community. Examples include managing a school garden to grow and sell produce, setting up recycling programs, or implementing energy-saving initiatives.
    b. Assign responsibilities to students, staff, or dedicated teams to oversee the development and maintenance of these micro-economies.
    c. Ensure that the generated revenue or savings from these projects are reinvested in sustainability efforts or used for educational purposes related to environmental awareness.
4. Collaborating with local charities and environmental organizations:

a. Establish partnerships with local charities focused on water quality issues or other environmental concerns. Explore opportunities to collaborate on joint initiatives or projects.
b. Reach out to environmental organizations to provide professional development courses or workshops for teachers, focusing on specific topics such as sustainable practices, waste management, or conservation.
c. Utilize the school garden or other resources to grow crops that can be donated to local shelters or food banks, in collaboration with relevant charitable organizations.

5. Inviting neighboring schools for peer learning:
    a. Develop a network with nearby schools that share an interest in sustainability. Establish channels of communication and organize regular meetings or workshops to exchange ideas, experiences, and best practices.
    b. Arrange visits or study tours between schools to showcase successful sustainability projects or initiatives.
    c. Facilitate collaborative projects or joint events with neighboring schools to foster collective learning and inspire one another.
6. Collaborating with local or regional universities:

a. Establish connections with universities in the local or regional area that offer programs or expertise related to education, sustainability, or environmental studies.
b. Explore opportunities for teacher education, such as guest lectures, workshops, or joint research projects with university faculty.
c. Engage in educational design research by partnering with university experts to enhance sustainability curriculum or develop innovative teaching approaches.
d. Undertake action research projects in collaboration with university researchers to evaluate the effectiveness of sustainability initiatives and interventions within the school setting.

7. Visiting nearby farms and collaborating with them:
    a. Identify nearby farms that are willing to host school visits to educate students about sustainable agriculture practices, organic farming, or animal welfare.
    b. Plan field trips to these farms, ensuring that students have hands-on experiences with growing vegetables, interacting with animals, or participating in farm-related activities.
    c. Explore opportunities for collaboration, such as partnering with farms to supply fresh and locally sourced produce to the school canteen, fostering a sustainable food supply chain.

8. Working with textile and fashion NGOs on sustainable clothing production:
    a. Reach out to textile and fashion non-governmental organizations (NGOs) that focus on sustainable and ethical clothing production.
    b. Collaborate with these NGOs to develop educational programs or workshops for students that promote awareness of sustainable fashion practices, including topics such as recycling, upcycling, or conscious consumerism.
    c. Encourage students to engage in projects that raise awareness about sustainable clothing choices, such as organizing fashion shows featuring eco-friendly designs or creating upcycled fashion collections.
9. Fundraising for an NGO working in the environmental field:
    a. Identify reputable non-governmental organizations (NGOs) that align with the school's environmental goals and initiatives.
    b. Organize fundraising events or campaigns within the school community, involving students, staff, and parents.
    c. Communicate the purpose and impact of the selected NGO to the school community, emphasizing how the funds raised will contribute to environmental conservation, sustainability projects, or related causes.

d. Regularly update the school community on the progress and outcomes of the fundraising efforts, fostering a sense of collective achievement and engagement.

Conclusion

Green schools are educational institutions that prioritize sustainability and environmental stewardship. They go beyond simply incorporating environmental topics into the curriculum; they embed these values into their culture, curriculum, and operations. By adopting a comprehensive, whole-school approach to green education, these schools ensure that sustainability principles are integrated into all aspects of their functioning.

One of the key elements of a green school is its commitment to engaging not only students and teachers but also administrative staff, parents, and the wider community. This inclusive approach recognizes that sustainability is a collective responsibility and requires the active participation of all stakeholders. By involving the broader community, green schools create a network of support and collaboration, fostering a sense of shared ownership over sustainability initiatives.

To fully embrace a whole-school approach, it is essential to develop a shared vision and commitment towards sustainability. This involves a clear understanding of the environmental impact of the school's activities and a willingness to adopt sustainable practices.

Implementing a whole-school approach to green education requires the active involvement of teachers. They play a critical role in shaping the attitudes,

knowledge, and behaviors of students. Research has shown that teachers can have a significant impact on students' environmental awareness and action through a wide range of green education activities. These activities can include incorporating sustainability themes into lesson plans, organizing environmental projects and initiatives, and promoting eco-friendly practices within the school community.

In the pilot training course conducted in Bulgaria, Romania, and Serbia as part of introducing current theoretical and practical model, teachers were empowered to create and test their own green education activities. The course aimed to provide teachers with the knowledge, skills, and resources necessary to foster green competences among their students. The feedback from the 62 participating teachers indicated that the training not only increased their confidence in implementing green education initiatives but also provided them with practical strategies and tools to effectively engage their students.

While the role of teachers is crucial, achieving a whole-school approach to sustainability requires the support of school leaders and administration. This has been recognized by academics and international bodies like the European Union, who emphasize the importance of strong leadership in driving sustainability efforts. School leaders and administrators play a vital role in

setting the tone, establishing policies, allocating resources, and creating a supportive environment for green initiatives to thrive.

To ensure the long-term success of efforts in developing a green mindset among future generations, it is essential to invest in the training and development of school leadership teams. These teams can serve as champions of sustainability within the school, driving change, and providing guidance and support to teachers and staff. By equipping school leaders with the necessary knowledge and skills, they can effectively integrate sustainability into the school's strategic planning and decision-making processes.

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