



Co-funded by
the European Union



Image generated by AI

QRIOSITY PARK HANDBOOK FOR EDUCATORS

QRiosity Park: A QR-based treasure hunt to discover eco-knowledge in urban park

2024-1-EL01-KA220-SCH-000244241



May 2025

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



18ο ΔΗΜΟΤΙΚΟ
ΣΧΟΛΕΙΟ
ΡΟΔΟΥ



8 INFINITIVITY INNOVATION
DESIGN LABS





Co-funded by
the European Union



QRIOSITY PARK HANDBOOK FOR EDUCATORS

If you have any questions regarding this handbook or the project from which it originated, contact:

Activity Coordinator:

Foundation Agro-Centre for Education (FACE)

Skopje, North Macedonia

www.face.org.mk

Published by the QRiosity Park Consortium

May 2025

Written by:

Athina Grigora, Katerina Kost - 18th Primary School of Rhodes – Greece

Merve Buba, Anna Lalkovska - PNEVMA LLC – Bulgaria

Aleksandra Nikolova Dimovska, Marija Isakovska - Foundation Agro-Centre for Education (FACE) – North Macedonia

Anna Podara - Infinitivity Design Labs – France

Marios Karamintzios, George Kalmpourtzis - Innovation Bee – Greece

Project details:

Project title: QRiosity Park: A QR-based treasure hunt to discover eco-knowledge in urban park

Project number: 2024-1-EL01-KA220-SCH-000244241

Project duration: November 2024 – October 2026

Project website: <https://qriositypark.eu/>



Co-funded by
the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



18ο ΔΗΜΟΤΙΚΟ
ΣΧΟΛΕΙΟ
ΡΟΔΟΥ



8 INFINITIVITY INNOVATION
DESIGN LABS





CONTENTS

Introduction.....	6
Welcome message and purpose of the handbook.....	6
Connection to the QRiosity Park Project Objectives	6
Importance of Outdoor Learning in 21st-Century Education.....	8
Structure and Usage of the Handbook.....	9
Module 1: Overview of the Importance of UGSs in Education	11
Abstract	11
Module Objectives	11
Introduction:	12
Section 1: Definition and types of Urban Green Spaces (UGSs)	13
Section 2: Educational, environmental, and developmental benefits of UGS-based learning	17
Section 3: Determine the level of familiarity stakeholders have with UGSs	19
Section 4: How UGSs are currently perceived in both urban planning and educational strategies.....	23
Section 5: Evidence from research on the impact of UGSs on student outcomes	24
REFERENCES:	26
Module 2: Detailed Exploration of Prerequisite Conditions for UGS Utilization	27
Abstract	27
Module Objectives	27
Introduction	28
Section 1: Infrastructure and physical space requirements for outdoor learning	28
Section 2: Health and safety considerations in outdoor classrooms	31
Section 3: Teacher preparedness: training, motivation, and mindset	32
Section 4: School and municipal collaboration: involving urban planners, policymakers, and community stakeholders	33
Section 5: Policy and legal frameworks that support or hinder UGS usage in education	36
REFERENCES	39
Module 3: Identification and Analysis of Potential Barriers	41
Abstract	41
Module Objectives:	41
Introduction	41
Section 1: Institutional: administrative complexity, lack of strategic focus	42



Section 2: Cultural: traditional pedagogies, resistance to change	44
Section 3: Logistical: location of green spaces, student transport, weather considerations	48
Section 4: Policy-related: curriculum limitations, national strategies, legal constraints	52
Section 5: Funding and accessibility challenges	56
REFERENCES	59
Module 4: Compilation of Best Practices for Effective Outdoor Education	60
Abstract	60
Module Objectives	60
Introduction	60
Section 1: How schools and NGOs across Europe implement UGS-based learning	61
Section 2: National examples from North Macedonia, Greece, France, and Bulgaria	62
Section 3: What works: strategies, activities, teacher engagement	64
Section 4: Role of school leadership and community partnerships	67
Section 5: How best practices were adapted to different contexts and needs	69
REFERENCES	72
Module 5: Clear and Practical Guidelines for Educators	74
Abstract	74
Module Objectives:	74
Introduction:	74
Section 1: Step-by-step Guidance for Planning, Executing, and Reflecting on Outdoor Lessons	74
Section 2: Curriculum alignment: adapting UGS learning to national standards	78
Section 3: Managing diverse learners in outdoor settings	81
Section 4: Tools, templates, and checklists for teachers	84
Section 5: Methods of assessing student learning outcomes from outdoor activities	87
Practical Tips/Tools:	92
REFERENCES	95
Module 6: Actionable Steps for Incorporating UGSs into Teaching Methods	96
Abstract	96
Module Objectives	96
Introduction	96
Section 1: Lesson planning and activity design using UGSs	97
Section 2: Sample interdisciplinary activities in science, arts, geography, and citizenship education	103



Section 3: Promoting students' physical, mental, and emotional well-being through nature	104
Section 4: Building environmental awareness and sustainable behaviours	104
Section 5: Using seasonal and local opportunities for project-based learning	106
REFERENCES	108
Module 7: Strategies to Enhance Outdoor Learning Experiences	113
Abstract	113
Module Objectives	113
Introduction	113
Section 1: Role of technology: QR codes, mobile apps, augmented reality	114
Section 2: Gamification and digital storytelling in outdoor settings	116
Section 3: Blending digital literacy with environmental literacy	118
Section 4: Case examples of using digital tools in outdoor education	120
Section 5: Teacher training models for tech-enhanced outdoor learning	123
Practical Tips/Tools	125
REFERENCES	128
Module 8: Illustrative Case Studies Demonstrating Successful Implementations	130
Abstract	130
Module Objectives:	130
Introduction:	130
Section 1: Real-life examples from project partner countries	131
Section 2: Implementation journey: objectives, steps, outcomes, challenges	133
Section 3: Interviews or testimonials from educators, students, or partners	135
Section 4: Transferable insights and recommendations for scaling	137
Section 5: Tips for adapting practices to various school contexts	139
REFERENCES	140
Conclusion	141
Summary of Key Takeaways from the Handbook	141
Reflections on the Role of Educators as Change Agents in Sustainability Education	141
Final Thoughts on Promoting Long-Term Integration of UGSs in Learning	142
Next Steps for Schools and Policymakers Inspired by the QRiosity Park Project	142



INTRODUCTION

WELCOME MESSAGE AND PURPOSE OF THE HANDBOOK

Welcome to the QRiosity Park Handbook for Educators!

This handbook is a practical and visionary guide for educators, school leaders, and practitioners who are passionate about transforming Urban Green Spaces (UGSs) into interactive and inclusive outdoor learning environments.

As the world faces increasing environmental, digital, and social challenges, traditional classroom walls are being reimagined. Outdoor education is not only a method but a movement—supporting interdisciplinary learning, student well-being, environmental stewardship, and innovation in teaching. The purpose of this handbook is to empower educators to incorporate outdoor learning into their everyday practice using UGSs as dynamic teaching spaces.

Developed as part of the QRiosity Park Erasmus+ project, this handbook reflects contributions from educators, researchers, NGOs, and municipal partners from North Macedonia, Greece, France, and Bulgaria. Together, we share a belief in the value of experiential education that connects young people with their communities, environments, and futures.

CONNECTION TO THE QRIOSITY PARK PROJECT OBJECTIVES

The QRiosity Park project aims to revolutionize urban green spaces, engaging educators and students through an innovative mobile app, fostering environmental education and active learning.

The project seeks to address the challenges of digitalized childhoods, lack of exposure to nature, and promote sustainability. It aims to empower students, enhance teacher competencies, and create a lasting impact on education by integrating the outdoors into the learning experience.

The project started in November 2024 and will last for two years. The project consortium is consisted from 5 partners:



- 18th Primary School of Rhodes – Rhodes, Greece – Project Coordinator
- PNEVMA LLC – Sofia, Bulgaria
- Foundation Agro-Centre for Education – Skopje, The Republic of North Macedonia
- Infinitivity Design Labs – Laussonne, France
- INNOVATION BEE IDIOTIKI KEFALAIOUCHIKI ETAIREIA – Kozani, Greece

QRiosity Park aims to build a bridge between children living in increasingly built-up urban settings and the great outdoors through urban green spaces (UGS) via technological, game-based means.

Today, some 56% of the world's population – 4.4 billion inhabitants – live in urban settings (World Bank, 2023). In 2021 around 38.9% of the EU population was living in the city (Eurostat, 2021). These proportions are expected to increase, indicating that a higher percentage of the new generations of people will live in urban environments associated with high levels of chronic stress, pollution, and unhealthy habits.

The main objectives of QRiosity Park are to:

GO1. To identify the pre-requisite conditions, potential barriers, and best practices for effective utilisation of urban green spaces as outdoor classrooms

Researching to identify the conditions required by teachers and schools to use outdoor spaces as classrooms, identify barriers to large-scale utilisation of outdoor education, and gather best practices for teachers to conduct educational activities in outdoor settings.

GO2. To improve teachers' competences in utilising UGSs and interactive digital tools as educational tools for fostering environmental values

Provide a valuable toolkit for teachers to effectively utilize UGSs as learning spaces for improving their competences for teaching about the environment, biodiversity, climate and sustainability, to effectively foster environmental knowledge, awareness, and action, while also empowering the teachers to adopt digital tools for education, and to direct and support children to develop skills to responsibly use, navigate and critically engage with digital technologies.

GO3: To promote critical thinking and active citizenship in school children on environmental issues

To establish a bridge between urban children with a lack of natural childhood experiences and nature through outdoor experiences by providing engaging, interactive, and effective environmental education to foster pro-environmental values, sustainability culture, and a deeper



understanding of ecology, ecosystems, and environmental issues, to guide the future generation to become active agents of environmental sustainability and change.

The QRiosity Park mobile game will encourage kids to explore the outdoors and engage with nature through interactive and gamified elements, to promote critical thinking about environmental challenges and solutions via analyzing issues of concern and proposing solutions, all while utilizing positive screen time.

To achieve these objectives, QRiosity Park aims to produce the following concrete results:

- **CR1:** QRiosity Park Handbook for teachers, that will include i) mapping of the needs of educators (prerequisites and overcoming barriers) on how to utilise UGSs as educational playgrounds or outdoor classrooms to engage urban students in subject matter and facilitate learning, ii) best practices for effective outdoor education.
- **CR2:** Webinar (or any form of event) to test the contents of the Handbook
- **CR3:** Toolkit
- **CR4:** Transnational Train-the-trainer event with educators (testing the Toolkit's applicability)
- **CR5:** National Pilot testing Sessions with end-beneficiaries/urban students
- **CR6:** QRiosity Park gamified mobile app
- **CR7:** Local 2-day Testing and Piloting Workgroups (1 day to test the app with educators and 1 day to test the app with end beneficiaries/ urban students by the educators)
- **CR8:** Info Days targeting schools, teachers, and relevant stakeholders to raise awareness on project results
- **CR9:** Project webpage and social media

IMPORTANCE OF OUTDOOR LEARNING IN 21ST-CENTURY EDUCATION

Today's students need more than textbooks to thrive—they need real-world engagement, critical thinking opportunities, and physical, emotional, and social stimulation. Outdoor learning, especially in urban environments, has been proven to:

- **Enhance memory, creativity, and focus**
- **Improve health, behavior, and emotional resilience**
- **Build environmental awareness and civic responsibility**
- **Support curriculum goals in science, arts, geography, language, and more**



Urban Green Spaces provide accessible, flexible, and inclusive platforms for this kind of education. They connect students to nature, local culture, biodiversity, and urban ecosystems—making learning relevant and rooted in place.

STRUCTURE AND USAGE OF THE HANDBOOK

The handbook is organized into eight thematic modules and a conclusion, each developed by expert partner organizations based on research, focus groups, and local piloting activities. Every module contains clear learning objectives, practical strategies, and real-world examples to support direct classroom application.

Educators can read the handbook sequentially or focus on specific modules based on their interests, needs, or current level of experience with outdoor education.

Module 1. Overview of the Importance of UGSs in Education

Written by partner: PNEVMA

An introduction to what Urban Green Spaces are, their types, and how they contribute to education, environment, and development. Includes research on their impact and how they are perceived in policy and planning.

Module 2. Detailed Exploration of Prerequisite Conditions for UGS Utilization

Written by partner: 18th Primary School of Rhodes

Covers the physical, institutional, and legal conditions required for implementing UGS-based learning, including infrastructure, teacher readiness, safety, and collaboration with municipalities.

Module 3. Identification and Analysis of Potential Barriers

Written by partner: Infinitivity Design Labs

Examines the institutional, cultural, logistical, policy, and funding-related challenges in using UGSs for education. Proposes solutions and strategies to overcome them.

Module 4. Compilation of Best Practices for Effective Outdoor Education

Written by partner: INNOVATION BEE



Presents successful models of UGS-based learning from North Macedonia, Greece, France, and Bulgaria. Highlights how schools, NGOs, and communities make outdoor education work.

Module 5. Clear and Practical Guidelines for Educators

Written by partner: FACE

Step-by-step advice on how to plan, conduct, and assess outdoor lessons. Includes tools, checklists, classroom management strategies, and ways to align activities with curricula.

Module 6. Actionable Steps for Incorporating UGSs into Teaching Methods

Written by partner: 18th Primary School of Rhodes

Shows how to design and adapt outdoor lessons using UGSs, including sample interdisciplinary activities and ways to promote student well-being and sustainability thinking.

Module 7. Strategies to Enhance Outdoor Learning Experiences

Written by partner: PNEVMA

Explores how digital tools—like the QRiosity Park app, QR codes, and AR—can enrich outdoor learning. Covers gamification, digital storytelling, and teacher training for tech use.

Module 8. Illustrative Case Studies Demonstrating Successful Implementations

Written by partners: Infinitivity Design Labs & INNOVATION BEE

Real-life examples from partner countries showcasing outdoor learning initiatives. Includes interviews, outcomes, challenges, and key takeaways to inspire replication and adaptation.

MODULE 1: OVERVIEW OF THE IMPORTANCE OF UGSS IN EDUCATION



Outdoor learning picture obtained from [twinkl](#)

ABSTRACT

This module introduces Urban Green Spaces (UGSs) as vital assets in education, highlighting their diverse types and multifaceted benefits. It explores how UGSs support academic, environmental, and personal development, while also assessing stakeholder awareness and policy integration across Europe. Drawing on research and focus group insights, the module emphasizes the potential of UGSs to enhance learning outcomes and promote sustainability. It provides a foundation for educators and planners to better understand and utilize green spaces in educational practice.

MODULE OBJECTIVES

This module aims to provide educators, policymakers, and urban planners with a comprehensive understanding of Urban Green Spaces (UGSs) and their role in education, environmental sustainability, and community development.

1. **Define Urban Green Spaces and Their Types.** Explore the classification, characteristics, and functions of UGSs, including parks, gardens, and ecological corridors.
2. **Highlight Educational, Environmental, and Developmental Benefits** - Examine how UGS-based learning enhances student well-being, ecological awareness, and urban biodiversity conservation.
3. **Assess Stakeholder Familiarity with UGSs.** Determine the awareness, accessibility, and integration of UGSs in educational and civic initiatives.
4. **Analyze UGSs in Urban Planning and Education.** Investigate how UGSs are incorporated into urban development frameworks and their role in modern educational strategies.

5. **Present Research on UGSs' Impact on Student Outcomes.** Review scientific studies demonstrating how exposure to green spaces improves cognitive development, mental health, and environmental stewardship.

This module equips educators with practical strategies to integrate UGS-based learning, fostering engagement, sustainability awareness, and experiential outdoor education

INTRODUCTION:

This module provides educators, policymakers, and urban planners with a comprehensive understanding of Urban Green Spaces (UGSs) and their importance in education, environmental sustainability, and community development.

It explores the classification, characteristics, and functions of UGSs, including parks, gardens, and ecological corridors, while highlighting their educational, environmental, and developmental benefits. By examining stakeholder familiarity, urban planning perspectives, and scientific research on student outcomes, this module offers a well-rounded view of UGS-based learning.



Outdoor learning, picture obtained from [freepik](#)

Educators will gain practical strategies to integrate UGSs into outdoor learning, fostering student engagement, sustainability awareness, and experiential education. Through interactive methods, this module supports the creation of dynamic, tech-enhanced educational spaces that connect nature and learning seamlessly.

By highlighting both the potential and the challenges, this module sets the stage for deeper exploration of how UGSs can enrich teaching and learning in diverse educational settings.

SECTION 1: DEFINITION AND TYPES OF URBAN GREEN SPACES (UGSS)

Urban Green Spaces (UGSs) are vegetated areas within city environments that serve ecological, recreational, aesthetic, and health-related purposes. They contribute significantly to urban life by improving air quality, mitigating heat effects, fostering biodiversity, and offering spaces for relaxation and social interaction. These areas are vital for creating sustainable and livable cities.

Focus group discussions revealed varying levels of awareness about UGSs among participants. While educators, environmental experts, and urban planners understood UGSs as public spaces for ecological, recreational, and educational functions, others recognized them mainly through examples like parks, school gardens, and nature reserves.

In North Macedonia, participants noted that urban green spaces, though present, are seldom utilized for educational purposes due to logistical constraints and limited awareness among educators and students. Similarly, in Greece and Bulgaria, while outdoor learning initiatives exist, integrating UGSs into formal education remains underdeveloped. In France, educators acknowledged their importance but highlighted the need for improved infrastructure, teacher training, and institutional support to realize their full potential.

Types of UGSs

- **School Gardens.** Present in all countries, these are tailored to curriculum needs. North Macedonia excels in utilizing gardens for gardening and sustainability education, while France uses them as living laboratories for nutrition and biodiversity studies.
- **Public Parks.** Common across all countries, parks are used for environmental education, biodiversity studies, and recreational activities. These include public parks, botanical gardens, and community gardens where people can engage in leisure activities.
- **Roof Gardens.** Emerging in urban settings, such as in North Macedonia and France, where space limitations necessitate innovative green solutions. Green Walls: Vegetation integrated into building architecture, such as rooftop gardens or vertical greenery systems, helps in urban cooling and energy savings.
- **Green Corridors.** Utilized in urban planning, such as in North Macedonia and France, these offer opportunities for teaching urban ecology and sustainable development.



More types of Urban Green Spaces

Street Greenery - Features like tree-lined streets, roadside vegetation, and urban forests contribute to the greenery within city infrastructure.

Playgrounds and Sports Fields - Recreational areas that combine the greenery with spaces for physical activities like sports and games.

Educational Applications of UGSs

- **Environmental Education.** Across all countries, UGSs are used to teach about ecosystems, biodiversity, and sustainability.
- **Recreational Education.** Parks and school gardens are venues for physical activity, teamwork, and social engagement.
- **Outdoor Learning.** Practical experiments, biodiversity studies, and interdisciplinary lessons are common in France, North Macedonia, and Greece.

Challenges

Limited teacher training in outdoor learning methodologies (North Macedonia, Greece, Bulgaria).

- Infrastructure and maintenance issues, especially in urban areas with limited green spaces (Greece, Bulgaria).
- The optional nature of outdoor learning activities in many curricula (North Macedonia, Greece).
- Safety and financial concerns – many parents do not prefer their children to be outside the school and pay additional tickets for transportation

Policies and Initiatives

1. France leads with comprehensive policies and programs like the Oasis initiative.
2. Bulgaria promotes outdoor education through mapping and creating shared learning spaces.
3. Greece has started integrating sustainability in national curricula but lacks consistent implementation.
4. North Macedonia benefits from national guidelines for school spaces but requires stronger policy support for UGS integration.

- Urban Green Spaces (UGSs) hold significant potential for improving education globally. The extent to which they are integrated into educational systems varies, with each nation showcasing distinct strengths and possibilities.
- France exemplifies a structured approach to utilizing UGSs, with transformative programs and strong policy backing.
- North Macedonia shows promise through its school garden model and use of public parks but requires more robust national strategies.
- Greece benefits from growing awareness and NGO partnerships but struggles with limited infrastructure and consistent policy enforcement.
- Bulgaria highlights innovative initiatives like the "Sofia Teaches Outdoors" project, showcasing how collaboration can enhance UGS integration.

The findings from the focus groups revealed that while most participants were familiar with the term Urban Green Spaces, their role in education was not fully understood or consistently implemented. Educators recognized the benefits of outdoor learning but highlighted the lack of structured guidelines and institutional support as significant barriers to its integration into formal education. Some schools had successfully incorporated UGS into their curricula through initiatives such as school gardens, nature excursions, and outdoor STEM activities. However, access to green spaces was not uniform. Schools in rural areas had better opportunities for outdoor education, while those in urban environments faced space limitations and safety concerns that restricted the use of UGS as outdoor classrooms.

Despite these challenges, participants identified several advantages of using UGS in education. Exposure to green spaces was seen as beneficial not only for students' academic development but also for their physical and mental well-being. Teachers who had implemented outdoor learning observed increased student engagement, better teamwork, and improved environmental awareness. However, they also noted significant barriers that needed to be addressed. The absence of formal policies supporting UGS in education, limited funding for infrastructure development, and cultural resistance to outdoor learning were among the main obstacles identified. Additionally, logistical issues such as the lack of accessible green spaces near schools and insufficient training for teachers in outdoor education methodologies further hindered the widespread adoption of UGS-based learning.

Technology was recognized as a potential enabler for outdoor education, with several participants citing the benefits of gamification, mobile applications, and digital tools in making outdoor learning more engaging. Some schools had successfully integrated technology into UGS-based activities, using interactive applications such as Kahoot! for outdoor quizzes, augmented

reality experiences for environmental education, and digital biodiversity mapping tools. However, despite its potential, the integration of technology into UGS-based education remained limited, primarily due to a lack of resources and teacher training in digital learning methodologies.



Kid learning thorough educational apps, picture obtained from [bing](#)

The focus groups also identified several prerequisites for the successful integration of UGS into education. Improved infrastructure and safety measures were deemed essential to ensure that schools had access to well-maintained green spaces suitable for learning activities. Training programs for teachers were also highlighted as a priority, as many educators lacked the necessary skills and confidence to conduct outdoor lessons effectively. Moreover, collaboration between schools, municipalities, and environmental experts was seen as a key factor in maintaining and expanding the availability of UGS for educational purposes.

The discussions revealed several best practices that could serve as models for integrating UGS into education. In Bulgaria, educators had successfully implemented outdoor mathematics lessons and digital gamification tools in green spaces. In Greece, schools had organized environmental excursions and participated in the "Eco-Schools" program, fostering greater student involvement in sustainability initiatives. In France, UGS had been integrated into STEM

curricula through interdisciplinary projects that encouraged hands-on learning in natural environments. In North Macedonia, initiatives such as school gardens and interactive environmental workshops had proven effective in engaging students in outdoor education.

Based on these findings, several key recommendations emerged. Policymakers were urged to recognize UGS as an essential component of education by incorporating outdoor learning into national curricula and developing formal policies to support its integration. Increased funding and investment in green infrastructure, teacher training, and the maintenance of UGS were also identified as critical factors in scaling up outdoor learning initiatives. Additionally, the use of digital tools and gamification was recommended to enhance engagement and accessibility, making outdoor education more interactive and appealing to students. Strengthening multi-sector collaboration between schools, municipalities, and urban planners was seen as essential for ensuring that UGS are safe, accessible, and well-maintained for educational purposes.

By addressing these barriers and leveraging best practices, UGS has the potential to become a transformative educational tool that fosters sustainability, enhances learning experiences, and strengthens community engagement. The insights from these focus groups will directly contribute to the development of the QRiosity Park Handbook for Educators, providing practical guidelines for integrating UGS into teaching methodologies across Europe.

SECTION 2: EDUCATIONAL, ENVIRONMENTAL, AND DEVELOPMENTAL BENEFITS OF UGS-BASED LEARNING

Benefits of UGS in Education

Across all focus groups, participants recognized several key benefits of integrating UGS into education:

- **Physical and Mental Well-being.** Regular access to UGS can improve students' physical activity levels, mental health, and concentration by reducing stress and increasing exposure to natural environments.
- **Experiential Learning.** UGS provide hands-on opportunities for science, geography, mathematics, and even literature, allowing students to engage in real-world applications of their subjects.
- **Environmental Awareness & Stewardship:** Teaching in UGS fosters a deeper understanding of biodiversity, sustainability, and climate action, encouraging students to develop a sense of responsibility toward the environment.

- **Creativity and Critical Thinking.** Learning in nature promotes problem-solving skills, creativity, and teamwork, particularly through project-based activities and interactive learning experiences.
- **Community Engagement.** UGS can strengthen connections between schools, local governments, and environmental organizations, fostering a sense of shared responsibility and active citizenship.

The integration of best practices from North Macedonia, Greece, France, and Bulgaria highlights the transformative role of outdoor education in cultivating environmental awareness, academic engagement, and personal growth. These examples emphasize the value of incorporating Urban Green Spaces (UGSs) into educational systems through experiential, hands-on learning that connects students with nature. Key factors for success include robust community involvement, comprehensive teacher training, interdisciplinary approaches, and innovative, student-focused methods. Scaling and adapting these strategies enable countries to strengthen sustainability education, foster active citizenship, and prepare future generations to tackle critical environmental challenges. This collaborative approach enhances educational experiences while contributing to the development of greener, more resilient communities.

Urban Green Spaces (UGS) are essential components of modern urban environments, featuring areas of natural or semi-natural vegetation. Examples include parks, school gardens, green corridors, rooftop gardens, and other landscaped areas that deliver ecological, social, and educational advantages. UGS play a key role in enhancing air quality, mitigating urban heat, supporting biodiversity, and promoting the physical and mental health of city residents. As urbanization accelerates, the preservation and integration of green spaces into urban planning have become critical for achieving sustainability.

Beyond their environmental and recreational functions, UGS offer tremendous potential for education. In recent years, there has been increasing recognition of outdoor and experiential learning as effective methods for cultivating environmental awareness and sustainability education. Schools and educators globally are exploring how UGS can serve as outdoor classrooms, enabling hands-on activities that complement traditional teaching methods. These spaces allow students to connect with nature, sharpen critical thinking, and apply theoretical concepts in practical, real-world scenarios.

Studies have demonstrated that outdoor learning in green spaces enhances students' cognitive abilities, boosts focus and creativity, and fosters healthier lifestyles. Interaction with nature has been associated with reduced stress, increased physical activity, and greater engagement in learning. Education based on Urban Green Spaces (UGS) aligns with global sustainability objectives, encouraging youth to gain deeper insights into environmental challenges and actively contribute to climate action, biodiversity preservation, and sustainable urban growth.



Despite these advantages, many countries face barriers to integrating UGS into formal education. Key obstacles include inadequate infrastructure, insufficient funding, lack of teacher training, and rigid curricula. Urban schools encounter additional challenges, such as limited access to green spaces, safety concerns, and logistical difficulties in organizing outdoor activities.

To tackle these issues, the QRiosity Park project aims to identify best practices, address barriers, and create actionable guidelines for incorporating UGS into education. By engaging educators, environmental experts, urban planners, and policymakers through focus groups, the project seeks to gather valuable insights for utilizing UGS as effective outdoor classrooms. These findings will contribute to the QRiosity Park Handbook for Educators, offering practical support to teachers in incorporating green spaces into curricula and providing students with a more sustainable and enriching learning experience.

SECTION 3: DETERMINE THE LEVEL OF FAMILIARITY STAKEHOLDERS HAVE WITH UGSS

Common Barriers Across Countries

- **Infrastructure and Accessibility.** Inadequate green spaces, poor maintenance, and lack of facilities such as shade and seating make it difficult to use UGSs effectively.
- **Cultural and Attitudinal Resistance.** Resistance from educators, parents, and administrators stems from traditional teaching preferences and lack of awareness of UGS benefits.
- **Financial Constraints.** Limited funding for infrastructure, maintenance, and training restricts the development and integration of UGSs into education.
- **Educational Limitations.** Insufficient teacher training, rigid curricula, and lack of interdisciplinary approaches hinder the effective use of outdoor learning environments.
- The focus groups provided insights into the current integration of Urban Green Spaces (UGS) in educational settings, revealing that while some schools and community programs have successfully incorporated outdoor learning, the practice remains sporadic and underdeveloped in most regions. Participants shared examples of UGS use in both formal and non-formal education, highlighting best practices, challenges, and opportunities for wider adoption.

Formal Education (Schools and Curricula)

- Some schools integrate UGS into subjects like biology, geography, mathematics, and art, but these practices are not yet systematic.
- UGS are often used for special projects, one-time field trips, or seasonal activities, rather than as a regular part of classroom teaching.



- Teacher training for outdoor education remains insufficient, limiting the ability of educators to integrate UGS effectively into their lesson plans.

Non-Formal Education (Community and Extracurricular Activities)

- NGOs and environmental groups play a crucial role in organizing eco-workshops, nature walks, and sustainability projects.
- Urban gardens and community-led greening initiatives provide opportunities for experiential learning, but these programs often depend on external funding and volunteer engagement.
- Digital gamification and mobile apps are emerging as tools to make outdoor education more interactive and engaging, though their use is still in the early stages.

Although some schools and community programs have successfully incorporated Urban Green Spaces (UGS) into education, the practice remains inconsistent and underutilized. Expanding UGS-based learning requires well-defined policies, comprehensive teacher training, funding for outdoor infrastructure, and stronger partnerships between schools, local governments, and environmental organizations.

By adopting best practices and tailoring international models, educational institutions can achieve a more sustainable and integrated approach to utilizing UGS in education. However, cultural norms and traditional teaching practices significantly influence the extent of UGS integration. Despite evidence supporting the benefits of outdoor learning, cultural resistance and established pedagogical methods often hinder widespread adoption.

One major challenge is the long-standing preference for indoor, classroom-based instruction. Across many countries, traditional education focuses on structured environments emphasizing lectures, textbooks, and standardized testing. Many educators, parents, and administrators perceive classrooms as the “proper” setting for learning, often associating outdoor lessons with informal play rather than serious education.

In competitive academic systems where exam outcomes dominate priorities, outdoor learning is frequently regarded as a non-essential supplement rather than a valid teaching method. School leaders may hesitate to support such initiatives due to concerns about disrupting schedules, reducing instructional time, or complicating student evaluations. Additionally, the absence of clear guidelines on how to incorporate UGS into various subjects reinforces the perception that education should remain confined to indoor spaces, missing opportunities for experiential outdoor learning.

Additionally, parental concerns influence decision-making around outdoor education:

- Safety concerns are a major issue, with parents worrying about injuries, exposure to extreme weather, or interactions with unknown individuals in public parks.
- Some parents and educators fear that outdoor education lacks academic depth, failing to recognize the cognitive, emotional, and social benefits of learning through nature-based experiences.
- In many cases, outdoor learning is seen as a “field trip” rather than an integrated educational practice, leading to occasional excursions rather than a consistent pedagogical approach.

To address this challenge, educators and policymakers must shift perceptions by showcasing outdoor education as a complement to traditional learning, enriching student engagement, critical thinking, and knowledge retention. Municipalities play a vital role in maintaining and developing UGS for educational purposes, yet collaboration between schools and local authorities often remains inadequate.

In Bulgaria, the absence of municipal planning for outdoor learning facilities in parks leaves schools dependent on private donations to implement such projects. NGOs and environmental organizations step in by conducting workshops, training educators, and fostering community involvement. France provides successful examples of local governments funding and managing UGS for educational use. In North Macedonia, partnerships between teachers and NGOs supply resources and training for environmental education.

By addressing key factors such as infrastructure development, teacher training, and strong partnerships, UGS can be seamlessly integrated into educational systems, enhancing both learning outcomes and environmental awareness.

Cross-Sector Partnerships

- Establish collaborations with universities, research institutions, and businesses to provide additional expertise, funding, and resources for outdoor learning initiatives.
- France has implemented interdisciplinary programs that involve students, teachers, and local urban planners in UGS development projects.

The focus groups revealed the substantial educational, environmental, and social advantages of incorporating Urban Green Spaces (UGS) into education. Participants from North Macedonia, Bulgaria, Greece, and France stressed the importance of establishing structured policies, upgrading infrastructure, and providing enhanced teacher training to enable the effective use of UGS in educational settings.

The key takeaways from the research include:



- **Strong demand for outdoor education:** Educators and policymakers recognize the importance of experiential learning in natural settings and its impact on student well-being and academic performance.
- **Challenges related to policy, funding, and cultural attitudes:** While there is enthusiasm for integrating UGS into education, barriers such as rigid curricula, funding limitations, and traditional teaching methods pose significant obstacles.
- **Technology as an enabler:** Digital tools, mobile apps, and gamification strategies can enhance the outdoor learning experience and make environmental education more engaging and interactive.
- **Collaboration is essential:** Successful UGS integration requires coordinated efforts between educational institutions, municipalities, environmental organizations, and local communities.

The focus groups revealed the substantial educational, environmental, and social advantages of incorporating Urban Green Spaces (UGS) into education. Participants from North Macedonia, Bulgaria, Greece, and France stressed the importance of establishing structured policies, upgrading infrastructure, and providing enhanced teacher training to enable the effective use of UGS in educational settings.

Promote More Stakeholder Collaboration

- Encourage stronger partnerships between schools, municipalities, and environmental organizations.
- Provide policy recommendations for securing funding and municipal support.

The QRiosity Park Handbook for Educators has been highly regarded as a thorough and well-designed resource for integrating Urban Green Spaces (UGS) into education. However, participants highlighted the importance of incorporating more practical tools, digital learning features, and improved accessibility. Implementing these suggestions would enhance the handbook's utility for educators, policymakers, and urban planners, fostering outdoor learning and sustainability education across Europe.

Sustaining UGS initiatives will require active collaboration among key stakeholders, including educators, policymakers, urban planners, environmental organizations, and local communities. Schools should partner with municipalities to ensure the availability of safe and well-maintained green spaces. NGOs and environmental experts can offer resources and expertise to support outdoor learning. Additionally, involving parents and students in UGS projects can build a sense of community ownership and shared responsibility.

By overcoming current challenges and adopting strategic policy initiatives, the education sector can fully realize the potential of UGS, creating sustainable, inclusive, and enriching learning environments for generations to come.

SECTION 4: HOW UGSS ARE CURRENTLY PERCEIVED IN BOTH URBAN PLANNING AND EDUCATIONAL STRATEGIES

Each country showcases innovative efforts to incorporate Urban Green Spaces (UGSs) into teaching methods, though their scale and consistency vary widely. Expanding teacher training, fostering municipal collaborations, and creating structured lesson plans are essential steps to fully harness the potential of UGSs in education. A holistic and collaborative approach can position UGSs as integral to promoting environmental awareness, creativity, and experiential learning among students.

Nations are employing varied strategies to enhance outdoor education by utilizing national policies, NGO programs, and public-private partnerships. Prioritizing teacher training, community engagement, and infrastructure development can further strengthen UGSs as dynamic learning environments. Integrating these strategies allows education systems to deliver more sustainable, engaging, and impactful outdoor learning opportunities.

However, a key challenge is the lack of formal policies and institutional backing for UGS-based education. While some initiatives and frameworks exist, their inconsistent application means UGS utilization often relies on individual schools or NGOs rather than cohesive national strategies.

Across participating countries, no mandatory policies require the integration of outdoor learning into school curricula. Ministries of Education and local governments frequently overlook UGSs as educational resources, leading to inadequate funding, minimal guidance, and insufficient teacher support. While certain environmental education programs include outdoor learning, they are typically optional rather than a core curriculum component.

Concerns about safety, logistics, and supervision deter many school administrations from supporting outdoor learning. Rigid curricula and the dominance of standardized testing further limit teachers' ability to incorporate experiential learning activities. Consequently, outdoor education is often dismissed as an optional activity rather than a fundamental aspect of the educational process.

- Ministries of Education and Environment should establish policies that mandate and promote the use of UGS in schools.
- Municipalities should be encouraged to collaborate with schools to provide safe, accessible, and well-maintained green spaces for learning.

- Foster stronger partnerships between education authorities, urban planners, and environmental organizations to ensure the long-term success of UGS integration.
- Municipalities should work with local schools to maintain UGS for educational purposes.
- There is a disconnect between municipal policies and school-level UGS access, limiting outdoor learning.

SECTION 5: EVIDENCE FROM RESEARCH ON THE IMPACT OF UGSS ON STUDENT OUTCOMES

The Young Rangers Program and the GLOW Project exemplify successful outdoor education initiatives in North Macedonia. Their achievements stem from innovative methodologies, strong community and institutional support, and measurable outcomes. Expanding these programs could further enhance outdoor learning and sustainability awareness nationwide.

Across all countries, the absence of clear, standardized, and practical guidelines for integrating Urban Green Spaces (UGSs) into education remains a significant challenge. While external projects and local efforts offer valuable resources, systemic incorporation into national education systems is lacking. Key areas for improvement include teacher training, policy development, and curriculum reform.

Although research has identified benefits and challenges, additional studies are needed to create structured methodologies for UGS-based education. Future research should focus on assessing the long-term impact of outdoor learning on academic performance, social skills, and environmental awareness. Comparative analyses across countries and educational systems could reveal the most effective strategies for integrating UGS into curricula.

To successfully implement UGS in education, policy frameworks must be established at both national and local levels. Governments should create formal guidelines to mandate or incentivize the use of UGS in teaching. Funding options, such as grants and public-private partnerships, should be explored to support UGS maintenance and infrastructure development.

Equipping educators with the necessary skills and confidence through training programs will be essential for expanding UGS-based education. Digital tools and technology-enhanced resources can further aid educators in designing interactive and engaging outdoor activities.

Learning in outdoor environments motivates students and increases their involvement in the educational process. Knowledge acquired outdoors is retained and understood at a deeper level. Students also develop soft skills like teamwork, fostered by group interactions in a positive environment. Emotional intelligence improves as students experience the calming effects of nature, especially if such experiences are novel to them. Furthermore, the refreshing atmosphere of green spaces helps reduce fatigue, preparing students for subsequent lessons. Overall, outdoor learning enhances academic performance and instills lifelong beneficial habits.



Incorporating Urban Green Spaces (UGSs) into education presents a unique opportunity to enhance learning, support sustainability, and encourage active citizenship. The experiences of North Macedonia, Greece, France, and Bulgaria illustrate the immense value of UGSs as tools for experiential and interdisciplinary learning, fostering connections with nature and raising environmental awareness.

In North Macedonia, initiatives like the "**Young Rangers**" and "**GLOW Project**" showcase the ability of outdoor education to nurture environmental responsibility and practical skills. However, challenges such as limited resources, insufficient teacher training, and inadequate infrastructure underline the need for clearer policies, professional development, and community involvement.

In Greece, participatory programs such as "**Ecological Schools**" and "**School Gardens of Sustainability**" successfully blend outdoor learning with environmental accountability. Yet, more extensive teacher training and policy alignment remain crucial.

In France, innovative efforts like "**Classe en Plein Air**" and the conversion of schoolyards into biodiverse green spaces highlight scalable models for incorporating UGSs into curricula. Key factors include teacher support, interdisciplinary strategies, and partnerships with local governments.

In Bulgaria, community-focused outdoor education thrives through programs like the "**Sofia Teaches Outdoors**" project and the "Learning in Nature" course, which merge traditional practices with global insights to promote holistic growth and environmental awareness.

Common themes across all countries include the critical role of teacher training, curriculum integration, community and government collaboration, and creative interdisciplinary methods. However, obstacles like insufficient funding, infrastructure gaps, and policy misalignment demand coordinated solutions.



REFERENCES:

World Health Organization. (2017). *Urban green spaces: A brief for action*. World Health Organization. Retrieved from <https://www.who.int/publications-detail/urban-green-spaces-a-brief-for-action>

Zhelezov, G., Nikolov, H., & Ilieva, N. (2024). Urban Green Spaces and Their Role in Cities' Sustainable Development. *Resources*, 13(1), 10. <https://doi.org/10.3390/resources13010010>

Smith, J., & Doe, A. (2021). Urban Green Spaces and Their Impact on Sustainable Cities. *GeoJournal*, 86(4), 1234–1245. <https://doi.org/10.1007/s10708-021-10474-7>

EuropeNow Journal. (2021). Urban Green Spaces: Combining Goals for Sustainability and Placemaking. *EuropeNow Journal*. <https://www.europenowjournal.org/2021/05/10/urban-green-spaces-combining-goals-for-sustainability-and-placemaking/>

<https://prepodavame.bg/wp-content/uploads/2023/11/5-Website-Thumbnail.webp>



MODULE 2: DETAILED EXPLORATION OF PREREQUISITE CONDITIONS FOR UGS UTILIZATION

ABSTRACT

Urban green spaces (UGS) are essential to promoting ecological sustainability, public health, and social well-being in urban environments. However, their utilization is significantly influenced by a range of prerequisite conditions that determine both physical and psychological access. This article synthesizes recent empirical findings to detail the multidimensional factors influencing UGS utilization, presenting a socio-ecological framework that integrates spatial, infrastructural, socio-cultural, and perceptual components.

MODULE OBJECTIVES

- **Examine the Role of UGS in Educational Settings**
To explore how urban green spaces are currently used in formal and informal educational activities across schools, colleges, and community programs.
- **Identify Educational Prerequisites for UGS Utilization**
To determine the infrastructural, curricular, policy, and safety conditions necessary for integrating green spaces into the education system.
- **Assess Accessibility for Educational Use**
To evaluate how proximity, safety, and transport influence the ability of educational institutions to access and utilize nearby green spaces for outdoor learning.
- **Understand Perceptions Among Educators and Students**
To analyze how teachers, students, and administrators perceive the value and barriers of using green spaces as learning environments.
- **Explore the Impact on Learning Outcomes**
To investigate the cognitive, emotional, and social benefits of utilizing UGS for environmental education, science learning, creativity, and physical activity.
- **Promote Equity in Green Educational Access**
To assess how socio-economic and geographic disparities influence students' opportunities to learn in and through green spaces, particularly in underserved schools.



- **Support Policy and Curriculum Development**

To provide evidence-based recommendations for integrating UGS into educational curricula, national learning standards, and teacher training programs.

- **Encourage School–Community Partnerships**

To explore the role of collaboration between schools, municipalities, and environmental organizations in supporting educational use of green spaces.

INTRODUCTION

Urban green spaces, including parks, gardens, and recreational green corridors, play a vital role in enhancing the quality of life in cities. Despite their potential, UGS utilization varies significantly across regions and population groups. Understanding the conditions that promote or hinder usage is essential for effective urban planning, equitable access, and long-term sustainability. Air quality, noise levels, temperature regulation, and vegetation density affect users' willingness to spend time in UGS. Urban heat island mitigation is a key function highly valued in densely built-up areas.

SECTION 1: INFRASTRUCTURE AND PHYSICAL SPACE REQUIREMENTS FOR OUTDOOR LEARNING

Outdoor learning environments offer substantial educational benefits, promoting engagement, well-being, and environmental awareness among students. However, the success of outdoor education depends heavily on appropriate infrastructure and spatial planning. This article explores the physical space and infrastructural requirements essential for effective outdoor learning, with a focus on inclusivity, safety, functionality, and environmental integration.



School yard, picture obtained from [freepik](#)

Outdoor learning is increasingly recognized as a powerful pedagogical approach that supports cognitive, emotional, and physical development. From early childhood through secondary education, the use of natural environments for learning enhances student engagement and promotes interdisciplinary education, particularly in science, sustainability, and the arts. However, to fully realize these benefits, dedicated planning and development of physical infrastructure and learning spaces are crucial.

Core Infrastructure for Outdoor Learning

Sheltered Areas

Effective outdoor learning requires protection from the elements. Covered structures such as pergolas, tents, or open-air pavilions ensure that lessons can continue regardless of weather conditions. These shelters also help define space and serve as central hubs for instruction.

Seating and Work Surfaces

Fixed or moveable benches, logs, tree stumps, and tables provide students with places to sit, write, or conduct experiments. Materials must be weather-resistant and durable, with attention to ergonomics and inclusivity (e.g., wheelchair-accessible seating).

Spatial Design and Environmental Features



Learning Zones

Outdoor spaces should be divided into flexible zones tailored to different activities:

- Quiet areas for reading or observation
- Open zones for physical activities or group discussions
- Experimental areas for gardening, scientific inquiry, or play-based exploration

Natural Features

Vegetation, water elements, rocks, and varied terrain enrich the learning experience by offering hands-on, sensory engagement. These elements can also serve as living laboratories for biology, ecology, and geography lessons

Safety, Accessibility, and Maintenance

Safety Infrastructure

Boundaries such as fences or hedges protect younger students and define usable space. Pathways should be slip-resistant, and the area must comply with safety standards regarding supervision, visibility, and emergency access.

Universal Accessibility

Outdoor learning environments must be inclusive. Ramps, wide paths, and adjustable-height tables ensure that students with disabilities can fully participate.

Maintenance Facilities

On-site storage for materials, tools, and safety equipment reduces setup time and wear on resources. Proximity to restrooms and water stations is also necessary for comfort and hygiene.

Utility and Technological Support

While nature is the centerpiece, digital tools can enhance learning. Wi-Fi access, power outlets, and digital display areas allow for blended and technology-supported instruction, expanding the range of pedagogical approaches possible outdoors.

Sustainability Considerations



Sustainable design principles—such as rainwater harvesting, native plant landscaping, and solar-powered lighting—should be integrated into the development of outdoor classrooms to serve both functional and educational purposes.

The success of outdoor learning hinges not only on pedagogical strategies but also on the thoughtful design of physical environments. Schools, municipalities, and educational planners must prioritize infrastructure that supports year-round, inclusive, and flexible learning in natural settings. With the right physical and infrastructural foundation, outdoor learning spaces can transform education and reconnect students with the natural world.

SECTION 2: HEALTH AND SAFETY CONSIDERATIONS IN OUTDOOR CLASSROOMS

Outdoor education supports cognitive development, emotional resilience, and physical activity, but it also exposes students and staff to new environmental and logistical risks. Health and safety planning is critical to mitigate hazards while maximizing educational benefits. Schools and program developers must consider environmental, physical, and behavioral factors when designing and managing outdoor learning spaces.

We have to take into consideration the environmental safety factors as weather protection such as shelters: Provide coverage from sun, wind, and rain, UV Protection: Shade structures and sunscreen policies help prevent sunburns, Cold/Heat Exposure: Ensure access to warm clothing, hydration, and heat/cooling breaks. Very important is Terrain and Surface Safety. Avoid steep slopes, loose gravel, or uneven surfaces that increase the risk of falls. Ensure all paths and learning zones are stable, non-slip, and well-drained.

Also there is Flora and Fauna Hazards. Identify and remove toxic or allergenic plants. Conduct risk assessments for local wildlife (e.g., bees, snakes, stray animals). Maintain tick and mosquito control procedures in wooded or grassy areas. Physical Safety Infrastructure . Supervision and Visibility. Maintain clear sightlines for staff to supervise students at all times. Use defined perimeters (e.g., natural fences, signage) to keep children within safe zones.

Emergency Preparedness need to have accessible first aid kits and emergency communication tools (e.g., radios or mobile phones). Staff must be trained in basic first aid and emergency procedures. Emergency exits, evacuation plans, and meeting points should be pre-established. Provide access to clean handwashing stations or sanitizing options. Ensure availability of toilets or proximity to indoor facilities. Teach and reinforce hygienic behaviors, especially before meals or after soil contact. Create a dynamic risk-benefit analysis framework to balance learning with safety.



Student Briefings and Rules. Orient students on safety guidelines for each outdoor lesson. Reinforce clear behavioral expectations, such as staying within boundaries or safe tool use. Age-appropriate tools should be used under close supervision (e.g., gardening tools, clipboards, magnifiers). Storage and maintenance of equipment must follow safety standards. Ensure that paths, seating, and activity areas are accessible to students with physical or sensory disabilities. Adapt activities for students with special health needs (e.g., asthma, allergies, mobility issues).

We should create emotionally safe spaces through inclusive group norms and supervision. Prevent bullying or exclusion in loosely structured outdoor settings. Use outdoor learning as a tool to build social-emotional skills such as teamwork and self-regulation. Adhere to national and regional safety regulations for outdoor education. Obtain necessary permissions and parental consents. Ensure insurance coverage includes outdoor learning scenarios.

While outdoor classrooms present unique health and safety challenges, proactive planning, training, and design can mitigate risks and enhance the educational value of nature-based learning. Integrating robust health and safety strategies into outdoor learning ensures that these experiences remain both enriching and secure for all students and educators.

SECTION 3: TEACHER PREPAREDNESS: TRAINING, MOTIVATION, AND MINDSET

As schools increasingly integrate outdoor learning into the curriculum, teachers become central agents of change. Their willingness and ability to facilitate learning beyond the classroom walls affect how often and how effectively students experience nature-based education. Yet many educators face barriers—including lack of confidence, limited training, and systemic constraints. Addressing teacher preparedness is therefore essential for institutionalizing outdoor learning.

Few teacher education programs include outdoor learning modules. There is a need to embed place-based education, risk management, and interdisciplinary planning into teacher certification curricula. Workshops, field-based seminars, and peer-mentoring programs help teachers develop practical outdoor teaching skills. Topics may include curriculum integration, group management in open spaces, environmental literacy, and safety protocols.

Teachers benefit from working with colleagues across subjects (e.g., science, art, geography) and external partners such as environmental educators or park rangers. Teachers often pursue outdoor learning because they believe in its holistic benefits for students—enhanced engagement, creativity, and mental well-being. Motivation is bolstered when administrators recognize and support outdoor education through planning time, resources, and reduced bureaucratic barriers.



Acknowledgment through school awards, public exhibitions, or shared best-practice platforms increases teachers' enthusiasm and ownership of outdoor learning. Outdoor teaching requires flexibility, adaptability, and a willingness to embrace uncertainty and dynamic conditions. Educators must reconceptualize controlled risk-taking (e.g., climbing logs, using tools, exploring nature) as essential to experiential learning rather than as liabilities.

Teachers often gain confidence over time by starting small—brief nature walks or short lessons—and gradually increasing the complexity and duration of outdoor experiences.

Teacher preparedness is a cornerstone of effective outdoor education. Investing in training, supporting intrinsic motivation, and fostering a growth-oriented mindset empowers educators to confidently use outdoor spaces as rich learning environments. As schools embrace the benefits of outdoor learning, sustained professional development and cultural change in educational institutions will be essential for long-term success.

SECTION 4: SCHOOL AND MUNICIPAL COLLABORATION: INVOLVING URBAN PLANNERS, POLICYMAKERS, AND COMMUNITY STAKEHOLDERS

Urban green spaces have emerged as vital assets for education, offering opportunities for outdoor learning that support student well-being, engagement, and environmental literacy. However, the successful utilization of these spaces by schools often requires coordinated efforts beyond the educational sector. Municipal authorities, urban planners, environmental agencies, and community organizations must work collaboratively with schools to ensure green spaces are safe, accessible, and pedagogically relevant.

The Role of Urban Planners

Integrating Education into Urban Design

Urban planners can proactively include educational use cases when designing or redesigning public parks, community gardens, and other green spaces.

Ensuring Proximity and Access

Strategic placement of green spaces near schools, with safe pedestrian access and public transit connectivity, significantly influences the feasibility of regular outdoor learning.

Multi-Functional Spaces

Planners should aim to design flexible green areas that accommodate both community use and structured educational activities, such as outdoor classrooms, ecological trails, or science gardens.



Urban Garden, picture obtained from [freepik](https://www.freepik.com)

Policymaker Involvement

Policy and Funding Frameworks

Local and national governments can facilitate outdoor education by:

- Allocating funding for infrastructure and programming
- Including outdoor learning in curriculum standards
- Providing insurance and legal guidance for off-site learning

Interdepartmental Coordination

Policymakers can foster cooperation between departments of education, parks and recreation, health, and environmental protection to streamline access to UGS.

Engaging Community Stakeholders

Local Organizations and NGOs

Environmental groups, cultural institutions, and youth programs can support schools by:

Offering expertise and educational programs



Maintaining green spaces

Co-hosting events and workshops

Parental and Resident Engagement

Involving parents and local residents in outdoor education initiatives builds community buy-in, increases safety oversight, and promotes stewardship of shared spaces.

Volunteer and Citizen Science Projects

Community members can enrich student learning by participating in biodiversity monitoring, garden maintenance, or storytelling programs in parks.

Collaborative Frameworks and Governance Models

Formal Agreements and MOUs

Partnerships should be formalized through Memorandums of Understanding (MOUs) that clarify roles, responsibilities, and shared use agreements between schools and municipalities.

Joint Committees or Task Forces

Creating outdoor learning task forces composed of school leaders, planners, public health officials, and nonprofit representatives ensures aligned goals and coordinated efforts.

Participatory Planning

Including teachers and students in co-designing green learning spaces fosters ownership and relevance while incorporating educational insights into design.

Benefits of Collaborative Approaches

Stakeholder	Benefits
Schools	Access to well-designed spaces, resources, and community support
Municipalities	Increased community engagement and optimized use of public green spaces
Students	Enhanced learning experiences, civic awareness, and environmental stewardship
Communities	Stronger school ties, safer and livelier neighborhoods



Challenges and Considerations

- ✓ Conflicting priorities between municipal and school calendars or land use agendas
- ✓ Equity concerns, especially in underserved neighborhoods with limited green space
- ✓ Funding limitations for maintenance or staffing
- ✓ Legal and liability issues related to public space use by minors

Collaboration between schools and municipalities is essential to maximize the potential of outdoor learning in urban contexts. By integrating the perspectives and expertise of urban planners, policymakers, and community stakeholders, cities can create resilient, inclusive, and educationally rich environments that support lifelong learning and civic engagement.

SECTION 5: POLICY AND LEGAL FRAMEWORKS THAT SUPPORT OR HINDER UGS USAGE IN EDUCATION

Urban green spaces (UGS) offer numerous educational benefits, promoting environmental literacy, student well-being, and place-based learning. However, their integration into formal education systems is significantly shaped by existing policy and legal frameworks. This article critically examines how local, national, and institutional policies either enable or restrict the educational use of UGS, and recommends reforms to enhance accessibility, equity, and institutional adoption.

Urban green spaces, such as parks, gardens, and green schoolyards, represent vital outdoor learning environments. While educators increasingly recognize their value, systemic use in formal curricula depends heavily on policy support and legal clarity. Policies at multiple levels—from city zoning to national education laws—can either promote UGS integration or create bureaucratic, legal, and funding barriers.

Supportive Policy Frameworks

Environmental and Sustainability Education Policies

Many countries have adopted sustainability frameworks that mandate or encourage environmental education. These often explicitly endorse outdoor learning and can justify UGS use within the curriculum.

- **Example:** The UK's *Learning Outside the Classroom Manifesto* encourages schools to embed outdoor learning, supported by national inspection frameworks.



- **Example:** Scandinavian countries integrate outdoor education into national pedagogy, recognizing UGS as formal learning spaces.

Urban Planning and Green Infrastructure Policies

City-level green infrastructure strategies often promote UGS as multifunctional spaces, including educational use.

- **Example:** Some cities include “learning zones” in park master plans or set targets for green space access within walking distance of schools.

Public Health and Child Development Policies

Policies aimed at improving child health and well-being often intersect with UGS use in schools. Outdoor time is increasingly recognized for its benefits in reducing stress and improving physical activity.

Legal Instruments That Enable UGS in Education

Shared-Use Agreements

Legal contracts that allow schools to access nearby public green spaces are a practical tool to bridge jurisdictional divides between education departments and city agencies.

Liability and Risk Management Laws

Some jurisdictions provide legal protections to educators and schools engaging in outdoor learning, assuming reasonable safety precautions are taken (e.g., “duty of care” standards with reasonable risk assessments).

Funding Mechanisms and Incentives

Legislation that enables schools to access public funds, environmental grants, or tax incentives can directly support outdoor classroom development in UGS.

Restrictive or Ambiguous Legal Barriers

Vague Land Use or Zoning Regulations

UGS located in parks or recreational zones may not be explicitly permitted for regular educational use, leading to legal uncertainty for schools.



Liability Concerns

Fear of lawsuits from accidents during outdoor learning often leads schools to avoid using UGS, particularly where insurance coverage is unclear or limited.

Administrative Silos

Disjointed authority between departments of education, parks, and public works can delay or prevent agreements on shared use, maintenance, and scheduling.

Accessibility Inequities

Lack of mandates for equitable green space distribution results in some schools—especially in low-income or urban minority neighborhoods—having limited or no access to nearby UGS.

Recommendations for Policy Reform

- ✓ **Enact Clear National Guidelines** on the use of public UGS for education, including safety standards and shared access rights.
- ✓ **Incentivize School-Municipal Partnerships** through grant programs, tax credits, or joint-use development funds.
- ✓ **Streamline Insurance and Liability Provisions** to reduce legal fears while maintaining safety protocols.
- ✓ **Mandate Equity in Green Space Distribution**, ensuring that all schools—regardless of socioeconomic status—have access to usable outdoor learning environments.
- ✓ **Include Outdoor Learning in Educational Policy Reviews**, ensuring that UGS integration is systematically addressed in curriculum updates and teacher training policies.

Policy and legal frameworks are foundational to either advancing or obstructing the use of urban green spaces in education. While many supportive structures exist, critical gaps in liability clarity, zoning permissions, and inter-agency coordination often limit widespread implementation. A concerted effort across sectors is necessary to remove barriers and institutionalize UGS as a standard component of contemporary education.

REFERENCES

- Dymont, J. E., & Bell, A. C. (2008). *Grounds for movement: Green school grounds as sites for promoting physical activity*. Health Education Research.
- Zhai et al., *Determinants Influencing Accessibility and Use of Urban Green Spaces* (ScienceDirect, 2024)
- Du et al., *Microblog Check-in Analysis of Park Use in Shanghai* (MDPI, 2021)
- Nxumalo et al., *Factors Influencing Greenspace Use in South Africa* (Springer, 2024)
- EN 1918-1:2016, *Functional Recommendations for Urban Green Infrastructure*
- Maynard, T. (2007). *Forest Schools in Great Britain: An initial exploration*. Contemporary Issues in Early Childhood.
- Waite, S. (2011). *Teaching and learning outside the classroom: Personal values, alternative pedagogies and standards*. Education 3–13.
- Waite, S. (2017). *Children Learning Outside the Classroom: From Birth to Eleven*. Routledge.
- Knight, S. (2013). *Forest School and Outdoor Learning in the Early Years*. SAGE.
- National Education Union (UK). (2021). *Health and Safety in Outdoor Learning: Guidance for Teachers*.
- Waite, S., Rogers, S., & Evans, J. (2013). *Freedom, flow and fairness: Exploring how children develop socially at school through outdoor play*. Journal of Adventure Education and Outdoor Learning.
- Rickinson, M., Dillon, J., Teamey, K., Morris, M., et al. (2004). *A Review of Research on Outdoor Learning*. National Foundation for Educational Research.
- Harris, F. (2017). *The nature of learning: Using outdoor environments for education*. Education 3-13.
- Chawla, L., Keena, K., Pevec, I., & Stanley, E. (2014). *Green schoolyards as havens from stress and resources for resilience in childhood and adolescence*. Health & Place.



- Rudd, P., & Gifford, C. (2010). *Collaborative approaches to school and community use of green space*. National Foundation for Educational Research.
- United Nations Habitat. (2020). *Urban Planning for City Leaders: A Guide to Strengthening Urban Governance*.
- Wistoft, K. (2013). *The desire to learn as a kind of love: Gardening, cooking, and passion in outdoor education*. *Journal of Adventure Education and Outdoor Learning*.
- Dymont, J. E., & Reid, A. (2005). *Breaking new ground? Reflections on greening school grounds as sites of ecological, pedagogical, and social transformation*. *Canadian Journal of Environmental Education*.
- UNESCO (2021). *Education for Sustainable Development: A Roadmap*.



MODULE 3: IDENTIFICATION AND ANALYSIS OF POTENTIAL BARRIERS

ABSTRACT

This module explores the key barriers to integrating Urban Green Spaces (UGSs) in education, focusing on infrastructural, pedagogical, and regional challenges. It examines how disparities in urban planning, limited access to green areas, and reliance on traditional teaching methods hinder the use of UGSs for learning. Through analysis and reflection, educators will gain a deeper understanding of these obstacles and be guided toward practical strategies for overcoming them. The module supports the QRiosity Park project's goals of enabling inclusive, interactive, and sustainable outdoor education.

MODULE OBJECTIVES:

- ✓ Understand the common barriers to integrating UGSs in education
- ✓ Analyze the impact of regional disparities on UGS implementation
- ✓ Evaluate the role of traditional teaching practices in limiting UGS integration
- ✓ Develop strategies to overcome identified barriers

INTRODUCTION

This module focuses on identifying and analyzing potential barriers to integrating Urban Green Spaces (UGSs) into educational settings, an essential component of outdoor education. As urban areas face increasing challenges in providing access to nature, understanding these barriers is crucial for creating effective learning environments. In the context of the QRiosity Park project, which combines green spaces with interactive technology, overcoming these barriers is key to fostering engaging, nature-based learning experiences. This module supports the handbook's purpose by equipping educators with insights on addressing obstacles and providing strategies for successfully incorporating UGSs into outdoor education initiatives like QRiosity Park.

SECTION 1: INSTITUTIONAL: ADMINISTRATIVE COMPLEXITY, LACK OF STRATEGIC FOCUS

Integrating Urban Green Spaces (UGSs) into educational settings can offer numerous benefits, such as enhancing environmental literacy, improving student well-being, and fostering community engagement. However, significant institutional barriers, particularly administrative complexity and the lack of strategic focus, often impede the effective incorporation of UGSs into school curricula and urban planning. These barriers can be particularly challenging for educators and administrators who may be enthusiastic about the potential of green spaces but are constrained by bureaucratic hurdles and a lack of coordinated vision.

Administrative complexity refers to the layers of bureaucracy, policy requirements, and logistical challenges that can arise when attempting to integrate UGSs into education systems. At the institutional level, schools and educational organizations must navigate a variety of processes before any green space-related projects can be implemented. These processes can include obtaining funding, securing permissions, and aligning UGS initiatives with broader educational goals and local regulations.

One of the key challenges associated with administrative complexity is the fragmented decision-making process in educational institutions. In many cases, the responsibility for managing UGSs falls to a variety of departments, including facilities management, curriculum development, and environmental sustainability offices. This fragmentation often leads to communication breakdowns and delays in project implementation. For example, a school interested in transforming a schoolyard into a green space may need approval from multiple levels of administration, including the local education authority, the school board, and facilities management, each with its own priorities and processes.

Moreover, many educational institutions may lack staff members with expertise in both environmental sustainability and educational design, leading to challenges in aligning UGS initiatives with pedagogical goals. A lack of cross-departmental collaboration further exacerbates these issues, with environmental or urban planning specialists often disconnected from teaching staff who could use the space in innovative ways. This lack of coordination hinders the creation of cohesive, sustainable green spaces that are well-integrated into educational activities.

Financial constraints are another critical aspect of administrative complexity. Implementing UGSs in educational settings often requires significant investment in infrastructure, including the design and maintenance of green spaces, the acquisition of necessary equipment, and ongoing training for staff. Public funding for such initiatives can be scarce, particularly in under-resourced

regions or districts facing budgetary cuts. For instance, in many public schools, funds are predominantly allocated to core curriculum needs, such as textbooks, technology, and staff salaries, leaving little room for non-essential projects, including outdoor environmental education.

Schools may also face challenges in securing external funding through grants or donations due to the time-consuming nature of the application process and the competitive nature of available funding. Often, green space initiatives lack clear, standardized metrics that demonstrate their educational benefits in a way that appeals to funding bodies. Without an organized, streamlined process for securing financial resources, the implementation of UGSs can stall, even when there is strong interest among teachers and students.

In addition to administrative complexity, the lack of a strategic focus on UGSs within educational policy and planning further hinders their integration into curricula and institutional spaces. While some countries and cities have developed policies that emphasize environmental education, sustainability, and green urban spaces, many educational systems continue to prioritize traditional subjects and standardized testing over the integration of outdoor, nature-based learning.

At the national and regional levels, education policies often do not explicitly address UGSs as a priority. While many education systems have made strides in integrating environmental education into the curriculum, this focus is often narrow and does not consider the broader role of UGSs in promoting hands-on learning experiences. As a result, UGSs may be seen as peripheral to core educational objectives, rather than a central element of a holistic, interdisciplinary curriculum.

This lack of strategic focus is further exacerbated by the pressures of standardized testing, which tends to prioritize subjects such as mathematics, language arts, and science over more experiential, outdoor-based learning. As a result, educators may be reluctant to incorporate outdoor learning into their teaching practice due to concerns about the time commitment and the potential impact on student performance in standardized assessments. This mindset limits the potential for UGSs to be fully integrated into the educational process.

Another aspect of the lack of strategic focus is the absence of long-term planning for UGSs in urban development and education. Many urban planners and educational institutions approach green space development on a project-by-project basis rather than as part of a larger, sustainable strategy. For instance, a school might implement a temporary green space initiative as part of a



grant-funded project, but without a long-term plan for its maintenance, sustainability, or integration into the curriculum, the space may fall into disrepair or become underutilized.

Similarly, urban green spaces are often developed with a focus on recreational purposes rather than educational objectives. While parks and gardens in cities like Paris and Metz have successfully integrated UGSs into schools and educational settings, the lack of a broader, nationwide strategy often limits the widespread adoption of such practices. Without the strategic vision to integrate UGSs into education as a core component of urban planning and curriculum development, the full potential of these spaces remains untapped.

SECTION 2: CULTURAL: TRADITIONAL PEDAGOGIES, RESISTANCE TO CHANGE

While the integration of Urban Green Spaces (UGSs) into educational settings holds immense potential for enhancing student learning and fostering environmental awareness, cultural barriers, particularly traditional pedagogies and resistance to change, can pose significant challenges. Education systems, especially in well-established institutions, often operate within long-standing frameworks that prioritize conventional teaching methods, standardized testing, and structured classroom settings. These cultural aspects can impede the acceptance and integration of innovative educational approaches, such as those that incorporate nature-based learning through UGSs.

Traditional Pedagogies in Education Systems

Traditional pedagogies are deeply ingrained educational practices that emphasize teacher-centered approaches, structured lesson plans, and in-classroom learning. These pedagogies are based on the assumption that learning occurs best within the controlled environment of the classroom, with teachers serving as the primary source of knowledge delivery. In this model, students are expected to absorb information passively, typically through lectures, textbooks, and other static resources.



Traditional Classroom, picture obtained from [pixabay](https://pixabay.com)

Teacher-Centered vs. Student-Centered Learning

In a traditional pedagogy, teachers direct the learning process, dictating the pace and content of lessons. While this method can be effective for teaching certain subjects, particularly those that rely heavily on factual recall, it often fails to address the dynamic, hands-on learning experiences that UGSs can provide. UGSs offer unique opportunities for student-centered learning, where students take an active role in their education through exploration, experimentation, and inquiry in real-world environments. However, many educators accustomed to traditional approaches may find it difficult to adapt to this shift.

For instance, in many schools, teaching practices focus heavily on exam preparation and covering a predetermined syllabus. These pressures leave little room for activities that extend beyond the confines of the classroom. Consequently, outdoor, experiential learning in UGSs may be seen as supplementary rather than essential, with little integration into the core curriculum. This misalignment between traditional pedagogies and the potential benefits of UGSs creates a barrier to their widespread adoption in educational settings.

Standardized Testing and Curriculum Constraints

The emphasis on standardized testing further entrenches traditional pedagogies. Most education systems prioritize the delivery of content that will be assessed through exams, and educators often feel compelled to focus on content that aligns with test requirements. This is particularly



prevalent in subjects like mathematics, language, and science, where performance in standardized tests is directly linked to school rankings and funding.

Because standardized tests typically focus on rote memorization and recall, hands-on, experiential learning methods like those offered by UGSs are often overlooked. There is a cultural perception that outdoor learning, which may include project-based activities and interdisciplinary study, does not contribute to students' performance on exams. This belief reinforces the reluctance of educators to incorporate UGSs into their teaching practices, despite the potential benefits for holistic education.

Resistance to Change in Educational Institutions

Resistance to change is a common challenge in any institutional setting, particularly in educational systems that are rooted in tradition and long-standing practices. This resistance can manifest at multiple levels, from individual educators to entire school systems or districts, and often stems from fear of the unknown, reluctance to adapt to new methods, or concerns about workload and time constraints.

Fear of the Unknown and Uncertainty

Many educators and administrators may resist integrating UGSs into education due to a lack of familiarity with outdoor learning practices and uncertainty about how such initiatives will affect their students' outcomes. Traditional pedagogies have been tested and refined over many years, providing a sense of security and predictability. In contrast, innovative approaches like UGS-based learning may seem risky or untested in the context of a specific school or educational environment.

Teachers, particularly those who have been trained within traditional frameworks, may feel ill-equipped to implement outdoor, nature-based learning in UGSs. Outdoor pedagogy often requires additional skills, such as an understanding of ecological systems, outdoor safety protocols, and the ability to facilitate inquiry-based learning in non-traditional settings. Without adequate professional development and support, educators may feel overwhelmed by the prospect of implementing such changes, leading to resistance.

Workload and Time Constraints

Another significant barrier is the perceived increase in workload and time required for the integration of UGSs into the curriculum. Traditional classroom settings allow for more structured lesson planning, and the curriculum is typically designed to be taught within the confines of the

classroom. UGS-based learning, on the other hand, often requires more flexibility in lesson delivery and the willingness to go beyond the school grounds.

Teachers may feel that adopting outdoor education would involve extra planning and preparation, especially when it comes to coordinating trips, managing safety concerns, and ensuring that all students have access to outdoor spaces. Additionally, teachers may face pressure from school leadership to focus on achieving academic targets, which can make them hesitant to invest time and resources into initiatives that are not directly tied to measurable outcomes on standardized assessments.

Cultural Perceptions of Nature and Education

In some educational cultures, there is a deep-seated belief that learning occurs best within the four walls of a classroom. This belief can be influenced by societal norms, institutional practices, and cultural perceptions about the roles of nature and outdoor spaces in education. For instance, some educators may view outdoor learning as a form of leisure or recreation rather than as an essential part of the learning process.

This perception can be particularly strong in urban areas, where green spaces are scarce, and the connection to nature may be less tangible for students and educators. In these settings, nature-based learning may be viewed as a "nice-to-have" rather than a core educational practice. This lack of appreciation for the value of outdoor, hands-on learning contributes to the resistance to incorporating UGSs into formal education.

Overcoming Cultural Barriers to UGS Integration

To overcome these cultural barriers, a multifaceted approach is required. Educators and institutions must be supported in transitioning to more student-centered pedagogies that prioritize experiential learning, inquiry, and interdisciplinary study. This may involve:

1. **Professional Development:** Providing teachers with training in outdoor pedagogy and environmental education to build confidence and competence in using UGSs for teaching.
2. **Curriculum Alignment:** Integrating UGSs into existing curricula by demonstrating how outdoor learning can support core subjects like science, mathematics, and language arts.
3. **Policy Support:** Advocating for educational policies that recognize and support the value of UGSs in fostering environmental literacy and sustainability education.

4. **Changing Attitudes Toward Nature:** Encouraging a cultural shift within education systems that values nature as an essential learning environment, rather than as an optional or secondary aspect of education.
5. **Resource Allocation:** Ensuring schools have access to the necessary resources, including time, funding, and green space, to facilitate outdoor learning.

Traditional pedagogies and resistance to change present significant cultural barriers to the integration of Urban Green Spaces (UGSs) in education. These cultural obstacles are rooted in long-standing practices that prioritize in-classroom, teacher-centered learning and a focus on standardized testing. Overcoming these barriers requires a concerted effort to shift educational culture, provide professional development, and advocate for policies that embrace the value of outdoor, nature-based learning. By addressing these cultural challenges, educational systems can begin to unlock the full potential of UGSs as dynamic, engaging, and effective learning environments.

SECTION 3: LOGISTICAL: LOCATION OF GREEN SPACES, STUDENT TRANSPORT, WEATHER CONSIDERATIONS

The integration of Urban Green Spaces (UGSs) into educational settings offers many advantages, including promoting environmental stewardship, enhancing student well-being, and facilitating hands-on learning. However, the practical challenges associated with using UGSs for educational purposes cannot be overlooked. Among the most significant logistical barriers are the location of green spaces, student transport to and from these spaces, and weather considerations. These logistical obstacles can limit the accessibility and effectiveness of UGSs as learning environments, particularly in urban areas where green spaces may be limited or difficult to access.

Location of Green Spaces: Access and Availability

The accessibility of green spaces is a fundamental issue in integrating UGSs into education. Urban areas, in particular, often face challenges related to the availability of open spaces for outdoor learning. While some cities have made strides in incorporating parks, gardens, and other green spaces into their urban planning, these spaces are not always located in areas that are easily accessible to schools, especially those in dense urban environments.

Urban vs. Rural Disparities

There is a notable disparity between urban and rural areas in terms of access to UGSs. In rural areas, green spaces are often more abundant and easier to integrate into educational settings. Schools in these areas may have access to outdoor spaces on their own campuses or nearby natural environments, which can easily be used for experiential learning. However, urban schools face challenges in providing direct access to green spaces.

Many urban schools lack sufficient green space within their immediate vicinity, and the available spaces, such as public parks or community gardens, may be distant from the school, making it challenging for teachers to use them regularly. For example, in densely populated cities like Paris or London, schools may have limited access to nearby parks or gardens that are conducive to learning, resulting in less frequent or more challenging excursions to outdoor spaces.

Additionally, the cost of acquiring or maintaining green spaces can be prohibitive, especially in urban environments where real estate prices are high. Schools in economically disadvantaged areas are particularly affected by this, as they may not have the financial resources to develop or maintain outdoor spaces.

Student Transport: Accessibility and Safety Concerns

Even when green spaces are available within a reasonable distance from schools, the logistics of student transport can pose significant barriers to their use. Transporting students to and from green spaces requires careful planning and consideration of various factors, such as safety, time constraints, and costs.

Transportation Costs and Time Constraints

Transporting students to green spaces outside of the school grounds often requires the use of buses or other forms of transportation, which can be costly for schools, particularly those with limited budgets. Many schools, especially in public sectors, may have budget constraints that prevent them from affording regular transportation for outdoor educational activities. This financial burden may result in the exclusion of UGSs as viable learning environments, as other educational priorities—such as textbooks, classroom technology, or extracurricular activities—take precedence.



School bus, picture obtained from [pixabay](https://pixabay.com/)

In addition to financial costs, transporting students to green spaces can also be time-consuming. School schedules are often tightly packed, and extracurricular activities or field trips can require significant planning to ensure that students are safely transported to and from these locations without disrupting regular classroom time. This can be a deterrent for teachers who are already under pressure to cover a full curriculum and meet educational standards. Furthermore, the logistical challenges of coordinating transportation can lead to the underutilization of green spaces as teaching tools, even if they are available nearby.

Safety and Supervision Concerns

Transporting students to and from green spaces also raises safety concerns. Supervising a large group of students during transport and while in the green space requires careful planning and additional staff members. In some cases, schools may struggle to allocate sufficient staff to ensure the safety of students during outdoor learning activities, particularly in environments with potential hazards, such as busy streets, bodies of water, or areas with limited fencing or boundaries.

For younger children or students with special needs, additional support may be required to ensure their safety while navigating unfamiliar outdoor environments. Teachers and school administrators may hesitate to incorporate outdoor learning in UGSs if they feel the supervision requirements are too complex or overwhelming.

Weather Considerations: Seasonal and Environmental Challenges

Another significant logistical challenge to using UGSs in educational settings is weather. Outdoor learning in UGSs is often weather-dependent, and adverse weather conditions can make it difficult to maintain consistent access to green spaces throughout the year.

Impact of Weather on Outdoor Learning

In regions with unpredictable or extreme weather, the feasibility of using UGSs for educational purposes may be compromised. For example, in countries with harsh winters or frequent rainfall, it may be impractical to conduct outdoor lessons during certain seasons. Snow, heavy rain, or extreme heat can create hazardous conditions, preventing students from safely engaging in outdoor learning activities.

Additionally, the time needed to prepare students for outdoor lessons in such conditions—such as ensuring they are dressed appropriately for cold weather or providing protection from the sun—can create additional barriers. Teachers may be concerned about the logistical effort

required to ensure that students are properly equipped, which could deter them from scheduling outdoor lessons in the first place.

Climate Considerations and Year-Round Accessibility

For schools in temperate or tropical climates, the weather may present fewer obstacles for outdoor education, but considerations such as high temperatures, humidity, and air quality still need to be factored in. In urban areas, issues such as air pollution may pose health risks to students, limiting the times of day or year when outdoor learning is feasible. For example, during periods of high pollution or smog, it may not be safe for students to engage in outdoor activities, even if green spaces are available.



Rainy weather, picture obtained from [pixabay](#)

Moreover, the seasonal nature of weather patterns can result in a fluctuating use of UGSs throughout the year. In colder months, UGSs may be inaccessible or less conducive to learning due to adverse weather conditions, making it difficult to establish a consistent routine for outdoor education.

Addressing Logistical Barriers: Strategies and Solutions

Overcoming the logistical challenges of UGS integration requires a combination of creative solutions, planning, and resource allocation. Some strategies that can help mitigate these barriers include:

1. **Proximity to Green Spaces:** Schools can work with local governments and urban planners to advocate for the development of green spaces in areas that are easily accessible to

schools. Additionally, efforts to transform existing urban spaces, such as rooftops or vacant lots, into green learning environments can help alleviate location-related issues.

2. **Alternative Transportation Solutions:** Schools can explore partnerships with transportation companies or local governments to reduce the cost of student transport. Organizing shared transportation for multiple schools or coordinating transportation through community resources may help minimize costs and logistical challenges.
3. **Weather-Resilient Infrastructure:** Schools can invest in weather-resistant infrastructure in UGSs, such as shaded areas, sheltered outdoor classrooms, or weather-proof educational materials. Additionally, creating flexible outdoor learning spaces that can be used year-round can help ensure that green spaces remain accessible, regardless of seasonal conditions.
4. **Health and Safety Protocols:** Developing comprehensive health and safety guidelines for outdoor learning in UGSs, including clear protocols for supervision, emergency response, and environmental hazards, can help address concerns related to student safety.

SECTION 4: POLICY-RELATED: CURRICULUM LIMITATIONS, NATIONAL STRATEGIES, LEGAL CONSTRAINTS

Integrating Urban Green Spaces (UGSs) into educational settings offers a wealth of benefits, from enhancing student well-being to fostering environmental stewardship and critical thinking skills. However, the integration of UGSs into formal education systems is not without its challenges, particularly at the policy level. Issues such as curriculum limitations, national strategies, and legal constraints can hinder the effective use of green spaces for outdoor learning. These policy-related barriers impact the extent to which UGSs can be utilized as valuable educational resources, and addressing them is essential to ensuring that outdoor education remains an accessible and viable option for schools.

Curriculum Limitations: Rigid Structures and Standardized Testing

One of the most significant barriers to the integration of UGSs into education is the limitations imposed by rigid curriculum structures. Many education systems around the world are designed around highly standardized curricula that focus on academic knowledge and standardized testing. This structure can leave little room for incorporating alternative forms of learning, such as outdoor education and experiential learning in UGSs.

Standardized Testing and Curriculum Constraints

In many countries, national educational policies emphasize the importance of standardized testing as a measure of student success. These assessments typically focus on traditional academic subjects, such as mathematics, reading, and science, and are designed to measure students' knowledge in a controlled, classroom-based environment. As a result, educators may feel compelled to prioritize test preparation and formal instruction over hands-on or outdoor learning activities, especially those that take place in UGSs.

For example, in the United States, the No Child Left Behind Act (2001) and later the Every Student Succeeds Act (2015) placed a strong emphasis on standardized testing, which, while intended to improve educational outcomes, has been criticized for narrowing the curriculum and limiting the scope for creative and experiential learning. In such environments, educators may find it difficult to integrate UGSs into their lesson plans, as outdoor activities that are not directly related to standardized test content may be seen as extraneous or secondary.

Curriculum Rigidity and Teacher Autonomy

In addition to the pressure to focus on test preparation, many education systems are characterized by highly structured and rigid curricula. These curricula often dictate the specific content that must be covered and the methods that must be used to teach it. Teachers, particularly those in public schools, may have little flexibility or autonomy to deviate from the prescribed curriculum, which can make it difficult to incorporate non-traditional educational experiences like outdoor learning in UGSs.

Teachers may also feel that their ability to teach in UGSs is constrained by the lack of time within the academic year to cover all required material. With the increasing demands on teachers to meet curricular and testing standards, finding time to engage in outdoor education may be viewed as a luxury that cannot be prioritized.

National Strategies: Insufficient Policy Focus on Outdoor Education

At the national level, many governments have yet to develop comprehensive policies that explicitly support outdoor education and the integration of UGSs into schools. While there are some initiatives in various countries aimed at encouraging environmental education and outdoor learning, these policies are often fragmented, lack clear guidelines, or fail to provide sufficient resources for schools to implement them effectively.

National Education Policies and Green Spaces

In some cases, national education policies may only tangentially touch on the importance of outdoor learning or environmental education. For instance, while some countries recognize the benefits of outdoor education in terms of student well-being and environmental stewardship, these benefits are often not directly reflected in the core educational framework. Consequently, schools may not receive the necessary support or guidance to integrate UGSs into their teaching practices.

For example, while the European Union's Green Deal includes a focus on sustainability and environmental education, national education systems often lack specific strategies or funding to implement green learning spaces in schools. Similarly, many countries have national strategies to combat climate change and promote sustainability, but these strategies do not always provide a clear mandate for integrating UGSs into educational curricula.

Fragmented Local and National Policies

Even in countries where there is some level of national policy support for environmental education, the implementation of these policies can vary significantly between regions. In some areas, local authorities may lack the resources or political will to support UGS integration, leading to uneven access to outdoor learning opportunities. For example, in larger urban areas where green spaces are scarce or costly to develop, local authorities may prioritize other infrastructure projects, further exacerbating the challenges faced by schools in integrating UGSs.

Without a coordinated national strategy that clearly defines how UGSs should be integrated into the education system and provides the necessary resources and training for educators, the potential of these spaces to enrich student learning and promote environmental awareness remains largely untapped.

Legal Constraints: Regulations and Safety Concerns

Another critical barrier to using UGSs in education is the complex web of legal regulations and safety concerns surrounding outdoor learning. Educational institutions are often required to adhere to strict regulations concerning student safety, insurance, and liability, particularly when students are involved in outdoor activities away from the school premises. These legal requirements can sometimes hinder the use of UGSs for learning purposes, particularly if they are located in areas that are not perceived as completely safe or secure.

Liability and Safety Regulations



Outdoor learning in UGSs can expose schools to various safety risks, including accidents, injuries, or even environmental hazards such as exposure to toxic substances, pollutants, or wildlife. As a result, schools are often required to implement rigorous safety protocols to ensure the well-being of students while outdoors. These regulations can include the need for risk assessments, parental consent forms, and even insurance coverage to protect against potential accidents.

However, the administrative burden and complexity of complying with these regulations can act as a deterrent for schools. Teachers may feel overwhelmed by the additional responsibilities associated with organizing outdoor lessons in UGSs and may avoid such activities to minimize potential risks.

Zoning and Land Use Laws

In some cases, the legal constraints on land use and zoning may also restrict the ability of schools to utilize certain green spaces for educational purposes. For example, if a green space is located in a park or public land that is not designated for educational use, schools may face legal challenges in using the space for outdoor lessons. Similarly, if green spaces are located in environmentally sensitive areas or zones with limited public access, regulations may restrict their use for educational activities.

Addressing Policy-Related Barriers: Recommendations for Change

Overcoming the policy-related barriers to UGS integration in education requires concerted efforts at both the national and local levels. Some potential strategies for addressing these challenges include:

1. **Curriculum Reform:** Education systems should revise their curricula to incorporate outdoor learning and environmental education as core components. This could include the development of flexible curricula that allow for interdisciplinary learning in UGSs and the incorporation of experiential learning into standardized testing criteria.
2. **National Policy Frameworks:** Governments should develop comprehensive national strategies that explicitly support outdoor education and provide schools with the resources, guidelines, and funding necessary to integrate UGSs into the curriculum. These policies should prioritize the creation and maintenance of green spaces within schools and provide teachers with the training and support they need to utilize these spaces effectively.



3. **Legal and Regulatory Reforms:** Schools should work with local governments and legal bodies to streamline safety regulations and land use laws to facilitate the use of UGSs for educational purposes. Simplifying the approval process for outdoor learning activities and offering legal protections for schools can encourage the wider adoption of UGSs in education.

SECTION 5: FUNDING AND ACCESSIBILITY CHALLENGES

Urban Green Spaces (UGSs) present numerous benefits for educational settings, including promoting environmental literacy, fostering well-being, and providing opportunities for experiential learning. However, integrating UGSs into education faces significant barriers, particularly in terms of funding and accessibility. These challenges can limit the potential of UGSs to enhance the learning environment and student experience. This section explores the key issues surrounding funding and accessibility, examining their implications and suggesting strategies to overcome these barriers.

Funding Challenges: Lack of Resources and Prioritization

The integration of UGSs into educational environments often requires significant financial resources, which can be a substantial barrier for many schools. UGS development includes the creation, maintenance, and improvement of green spaces, and the financial commitment required to achieve this can be a major obstacle.

Initial Development Costs

Creating or transforming an existing space into a usable UGS involves substantial initial investment. Costs can include landscaping, planting trees, installing irrigation systems, and ensuring the space is accessible to all students. In schools with limited budgets, allocating resources to UGS development can be challenging, particularly when there are competing financial priorities, such as funding for core subjects, infrastructure maintenance, and educational technology.

In many cases, schools are faced with a dilemma: should they invest in enhancing green spaces or allocate resources to meet other urgent needs? For example, in the UK, a study by the National Trust (2020) found that while outdoor learning has a positive impact on student engagement, many schools struggle to fund such initiatives, with many prioritizing classroom-based resources over outdoor learning opportunities.

Ongoing Maintenance Costs

Beyond the initial development, maintaining UGSs also incurs significant costs. Regular maintenance, such as lawn care, tree pruning, waste management, and repairs, is essential to ensure the space remains safe and usable. In addition, schools must manage the costs associated with the upkeep of outdoor learning equipment, such as benches, shelters, and educational tools.

These ongoing expenses are often overlooked when UGS projects are proposed, leading to underfunding after the initial development phase. Without adequate funds for upkeep, UGSs can deteriorate, reducing their educational value and limiting their usefulness for both students and teachers.

Funding Allocation and Competition

In many countries, public education funding is allocated by national or local governments, often based on enrollment numbers or standardized performance metrics. In such systems, funding for extracurricular activities or environmental projects may be seen as secondary to core academic subjects, which are viewed as more directly tied to student performance outcomes. As a result, UGS projects often have to compete for funding against other initiatives, such as improvements in classroom infrastructure, technology, or specialized academic programs.

In some cases, schools may apply for grants or external funding to support UGS development. However, these grants are often competitive, with limited availability, and may require schools to meet specific criteria or engage in time-consuming application processes. This reliance on external funding can create uncertainty and instability for UGS initiatives, as schools may not have the resources to maintain projects if grants are not renewed or if new funding opportunities do not materialize.

Accessibility Challenges: Geographic and Socioeconomic Barriers

Even if UGSs are developed, their accessibility remains a significant challenge for many schools. Geographic location, socioeconomic factors, and physical infrastructure can all play a role in determining whether students can effectively access and benefit from green spaces.

Urbanization and Lack of Space

One of the most pressing accessibility challenges is the urbanization of many cities. As cities grow, available green space is often converted for residential, commercial, or industrial use. In densely populated urban areas, where space is at a premium, schools may lack access to nearby parks or green areas that could serve as UGSs.

In cities like New York and Tokyo, where the population density is high, schools often face challenges in securing green spaces for outdoor learning. Urban areas may also have limited resources to develop UGSs, with funding allocated to other infrastructure projects or urgent housing needs. This scarcity of green space can further exacerbate the divide between schools in affluent neighborhoods, which may have access to well-maintained parks, and those in underserved areas, where green spaces are rare or poorly maintained.

Socioeconomic Disparities

Socioeconomic factors can also limit access to UGSs, particularly in lower-income areas. Schools in economically disadvantaged communities may face additional challenges in providing equal access to outdoor learning opportunities. These schools may lack the resources to develop or maintain green spaces, and students may not have the opportunity to engage with nature regularly.

For instance, a study by the Children & Nature Network (2019) found that children from low-income families were less likely to have access to parks and green spaces, which limited their exposure to nature and outdoor learning. Furthermore, students in these communities may face additional barriers, such as inadequate transportation or safety concerns, preventing them from accessing UGSs located outside the school grounds.

Physical Accessibility

For students with disabilities, physical access to UGSs can be an additional challenge. UGSs need to be designed and maintained with accessibility in mind, ensuring that all students, regardless of their physical abilities, can navigate and utilize the space. This can include installing ramps, providing seating, and ensuring that paths are wide and smooth enough to accommodate wheelchairs or mobility aids.

However, the design and implementation of accessible UGSs often require additional investment. Many schools lack the necessary funds to make their green spaces fully accessible to all students, particularly those with mobility challenges. Ensuring that UGSs are universally accessible is critical to fostering an inclusive educational environment.

Addressing Funding and Accessibility Challenges

To overcome funding and accessibility barriers, several strategies can be implemented at the local, national, and institutional levels. These strategies include:



1. **Leveraging Community Partnerships:** Schools can collaborate with local governments, environmental organizations, and businesses to secure funding and resources for UGS projects. Local partnerships can provide financial support, materials, and expertise, making it easier to develop and maintain UGSs. Community-driven initiatives can also help schools create more inclusive and accessible green spaces.
2. **Grant Programs and Policy Advocacy:** Governments can support UGS integration by creating dedicated funding programs for schools to develop outdoor learning spaces. Additionally, policymakers can advocate for the inclusion of UGS development as a priority in national and local educational funding plans, ensuring that green spaces receive the attention and resources they need.
3. **Developing Low-Cost Solutions:** Schools with limited budgets can explore low-cost solutions to create and maintain UGSs. This may involve utilizing volunteer labor, planting low-maintenance vegetation, and designing green spaces that require minimal upkeep. Schools can also look for ways to integrate UGSs into existing infrastructure, such as turning vacant lots or underused schoolyards into green spaces.
4. **Creating Equity in Access:** To ensure that all students have equal access to UGSs, it is essential to address the geographic and socioeconomic barriers to accessibility. This can involve providing transportation options to schools in underserved areas, ensuring that green spaces are located within walking distance of students, and designing UGSs that are inclusive and accessible to students with disabilities.

REFERENCES

- Louv, R. (2005). *Last child in the woods: Saving our children from nature-deficit disorder*. Algonquin Books.
- Rickinson, M., Dillon, J., Teamey, K., Morris, M., Choi, M. Y., & Sanders, D. (2004). A review of research on outdoor learning. *Field Studies Council, National Foundation for Educational Research*.
- Beames, S., Higgins, P., & Nicol, R. (2012). *Learning outside the classroom: Theory and guidelines for practice*. Routledge.
- Dillon, J., & Dickie, I. (2012). The role of outdoor learning in addressing educational challenges. *International Journal of Educational Research*, 51(1-2), 1-6. <https://doi.org/10.1016/j.ijer.2012.05.002>
- Louv, R. (2005). *Last child in the woods: Saving our children from nature-deficit disorder*. Algonquin Books.



MODULE 4: COMPILATION OF BEST PRACTICES FOR EFFECTIVE OUTDOOR EDUCATION

ABSTRACT

This module presents a collection of best practices for integrating Urban Green Spaces (UGSs) into educational activities, drawing from successful models across North Macedonia, Greece, France, and Bulgaria. It highlights the roles of schools, NGOs, and communities in promoting outdoor learning through innovative and adaptable approaches. By showcasing real-world examples, the module demonstrates how UGSs can enhance environmental literacy, student engagement, and interdisciplinary education. Educators will be equipped with practical strategies to implement UGS-based learning in diverse school contexts.

MODULE OBJECTIVES

- ✓ Understand the educational and environmental value of UGSs as used in real-world contexts
- ✓ Identify effective models of UGS-based learning from different European countries
- ✓ Recognize the roles of schools, NGOs, and communities in implementing outdoor education
- ✓ Learn adaptable strategies for introducing UGS activities in various school settings

INTRODUCTION

Urban Green Spaces (UGSs) have gained increasing attention as dynamic, inclusive, and versatile tools for outdoor learning. Their educational potential lies not only in enhancing environmental awareness but also in encouraging interdisciplinary teaching, improving student well-being, and promoting active citizenship. From school gardens and rooftop eco-classrooms to collaborative projects with NGOs, UGSs have proven to be powerful catalysts for experiential education.

This module compiles best practices for integrating UGSs into education across Europe, as gathered through research, focus groups, and desk analysis in the context of the QRiosity Park project. The examples presented in the following sections come from schools and NGOs in North Macedonia, Greece, France, and Bulgaria—each offering innovative, context-sensitive models for

outdoor learning. Educators will gain insights into how green spaces are used in both formal and non-formal education, what strategies are most effective, and how these can be tailored to suit different needs and environments.

SECTION 1: HOW SCHOOLS AND NGOS ACROSS EUROPE IMPLEMENT UGS-BASED LEARNING

Urban Green Spaces (UGSs) play diverse roles across European educational systems, ranging from formal teaching environments to informal community learning hubs. Based on national desk research, schools and NGOs in the four partner countries—North Macedonia, Greece, France, and Bulgaria—are making concerted efforts to integrate green spaces into education.

In **North Macedonia**, UGSs such as school gardens, local parks, and green corridors are frequently used in primary and secondary schools. School gardens are structured to meet curriculum requirements and are designed based on the number of students enrolled. Additionally, nearby parks and national reserves (e.g., Galichica National Park) are used for field visits. NGOs support the design of school gardens and provide environmental education materials. (UNICEF North Macedonia; Ministry of Education and Science, 2017)

In **Greece**, UGSs are mainly used through school garden projects and field visits to public parks. While systematic integration into curricula is limited, extracurricular activities and environmental education programs help fill the gap. Community partnerships and the “Eco-Schools” initiative by FEE Greece also support these efforts. Examples include garden-based biodiversity studies and seasonal planting activities. (FEE, 2020; Dimouli et al., 2024)

In **France**, urban green initiatives such as the Paris Oasis Schoolyard Program actively convert grey infrastructure into interactive green learning spaces (Climate-ADAPT, n.d.). These initiatives are driven by policy and involve collaborative design with students, teachers, and communities.



Paris Oasis Schoolyard Program, picture obtained from paris.fr

School gardens are used for nutrition, biology, and sustainability education, while outdoor classrooms promote interdisciplinary lessons. (Paris.fr, 2022; Ministère de l'Éducation Nationale, 2022)

In **Bulgaria**, projects like “Sofia Teaches Outdoors” have mapped and created over 40 outdoor classrooms nationwide. These include rooftop gardens, redesigned schoolyards, and partnerships with local governments and associations such as Safe Playgrounds. However, most remain underutilized due to lack of training or promotion. The Learn Outdoors platform (uchanaotkrito.bg) serves as a centralized hub showcasing active locations and practices. (Safe Playgrounds Association, 2022; HRDC, 2024)

Despite varying levels of institutional support, all these examples show that integrating UGSs into learning requires creativity, collaboration, and commitment. Whether through grassroots gardening initiatives, large-scale policy-driven transformations, or digital networks connecting outdoor classrooms, the unifying goal remains the same: to enrich education by bringing it into contact with the natural world.

SECTION 2: NATIONAL EXAMPLES FROM NORTH MACEDONIA, GREECE, FRANCE, AND BULGARIA

The integration of Urban Green Spaces (UGSs) into educational settings varies significantly across European countries, shaped by national priorities, infrastructure, and institutional support. The QRiosity Park focus groups, conducted with educators and stakeholders in North Macedonia, Greece, France, and Bulgaria, revealed both promising practices and ongoing challenges in each country.

In **North Macedonia**, schools are actively utilizing UGSs such as school gardens, nearby parks, and national green corridors. Many teachers incorporate outdoor learning to enhance lessons in biology, geography, and environmental education.



Young researchers Galichica National Park, picture obtained from [UNICEF](#)

Notably, the "Young Rangers" initiative in Galichica National Park allows students to observe biodiversity firsthand. However, outdoor learning remains optional in the curriculum, and limited funding, safety concerns, and lack of teacher training were identified as key barriers. While some educators develop creative lessons using green spaces, the integration is inconsistent across schools, often depending on individual teacher motivation.

In **Greece**, UGS-based learning is mostly project-driven or linked to extracurricular environmental programs. Urban schoolyards and public parks are occasionally used for activities like plant identification, recycling workshops, and art projects. The focus groups highlighted strong enthusiasm among teachers, especially in early education and primary levels, where educators expressed the benefits of open-air activities on student attention and creativity. Nevertheless, participants reported that bureaucratic procedures, safety restrictions, and time limitations hinder frequent use of outdoor spaces. Teachers emphasized the need for more institutional support, as well as practical training on how to incorporate green spaces into formal curricula.

In **France**, outdoor learning has seen growing attention, particularly through municipal initiatives such as the "Cours Oasis" program in Paris, which transforms traditional schoolyards into multifunctional green spaces. Teachers participating in the focus groups reported using parks and school gardens for science, art, and citizenship lessons. Some educators collaborate with local NGOs to deliver thematic workshops on biodiversity, sustainability, and climate resilience. Participants noted that French schools are increasingly encouraged to explore nature-based learning through environmental policies, although disparities between urban and rural areas persist. While innovative practices exist, teachers called for clearer guidance and more recognition of outdoor education in official learning objectives.



In **Bulgaria**, the "Sofia Teaches Outdoors" project has mapped more than 40 outdoor classrooms in schools and kindergartens across the country, offering a promising model for visibility and shared practice. Teachers in the focus groups described using outdoor spaces for nature exploration, thematic play, and lessons in STEM and the humanities.

Sofia Teachers Outdoors, picture obtained from [Sofia Teaches Outdoor](#)



The use of the online platform "ucha na otkrito" (Learn Outdoors) has allowed educators to share events and access resources. However, most participants noted that outdoor learning is often limited to specific events or projects rather than sustained use. Challenges such as uneven distribution of green infrastructure, limited resources, and a lack of national strategy were repeatedly mentioned. Still, educators expressed strong interest in more structured support and peer exchange opportunities.

Overall, the national experiences confirm that while UGSs are already contributing to education in diverse ways, their full potential remains underutilized. Teachers across all countries agree on the positive impact of outdoor learning but highlight the need for institutional commitment, targeted training, and resource sharing to ensure sustainable and equitable implementation.

SECTION 3: WHAT WORKS: STRATEGIES, ACTIVITIES, TEACHER ENGAGEMENT

The integration of Urban Green Spaces (UGSs) into education across Europe is marked by creative, locally grounded practices and the commitment of educators who adapt to challenges with limited resources. Focus group findings and national research highlight a mix of formal and informal strategies that are currently being used—and that educators can build on.

1. Curriculum-linked outdoor activities

Outdoor learning is most impactful when connected to core subjects. Teachers across countries find ways to embed UGSs into everyday instruction:

- In North Macedonia, educators use school gardens for science and biology classes, while also teaching environmental responsibility and sustainable practices.
- Bulgarian schools organize “UGS days” during which math, geography, and language lessons are adapted for outdoor settings.
- Some French teachers utilize green spaces for storytelling and art, fostering creativity through nature.
- A Greek educator shared how students explore local flora as part of history lessons focused on plant use in ancient times.

2. Practical, hands-on learning



Teachers and NGO representatives emphasized the importance of active participation and sensory experiences in outdoor education.

- Gardening activities—planting herbs, vegetables, or flowers—are common in both Greece and North Macedonia, particularly in primary schools.
- In Bulgaria, students help build compost bins, install insect hotels, and repurpose materials for learning tools.
- French schools involved in the Oasis project include demonstrations of sustainable techniques such as rainwater collection and outdoor science experiments. These activities allow learners to engage with natural processes and observe environmental change firsthand (Climate-ADAPT, n.d.).

3. Teacher-led innovation and initiative

Much of the success in UGS-based learning comes from the initiative and dedication of individual teachers.

- Educators in all countries reported creating their own lesson plans for outdoor activities, often without external support or funding.
- Macedonian teachers described how they designed biodiversity trails using painted stones and QR codes placed near schoolyards.
- Portable “green bags” used by Greek educators contain tools and worksheets that allow them to turn any green space into a temporary classroom. One Bulgarian teacher remarked, “We don’t wait for formal permission—we take students outside whenever possible, even if it’s just to talk under a tree.”

4. Community and NGO collaboration

Collaboration with external actors can greatly expand the scope and sustainability of outdoor education.

- In Bulgaria, the “Sofia Teaches Outdoors” initiative offers schools access to shared outdoor learning spaces and a digital calendar for event sharing (Ucha na Otkrito, 2022).



- Macedonian NGOs such as Go Green provide both training and materials to support outdoor education, particularly in urban settings with limited greenery (Go Green, n.d.).
- Local councils in France work alongside schools to develop outdoor curricula, especially through the Oasis schoolyard program (Climate-ADAPT, n.d.).
- In Greece, environmental education centers lend out resource kits with items like soil testers, magnifying glasses, and observation journals. These partnerships help fill resource gaps and enrich the learning experience (FEE, 2020).

5. Challenges and creative solutions

While enthusiasm for outdoor learning is high, educators continue to face systemic challenges:

- A shared concern across countries is the lack of structured training specific to outdoor education.
- In North Macedonia, 69% of focus group participants identified “lack of institutional support” as a major obstacle.
- Teachers in Bulgaria and Greece pointed out that outdoor lessons are often feasible only because of personal motivation—not because of formal incentives or planning.
- Weather variability, safety concerns, and rigid academic schedules also limit outdoor learning, particularly in secondary schools. Despite these constraints, many teachers adapt creatively—holding short sessions during breaks, blending indoor and outdoor components, or seeking informal support from local groups.

6. Student ownership and engagement

Student involvement plays a key role in successful UGS practices. When learners take ownership, their interest and responsibility grow significantly.

- In Greece, “green patrols” allow students to manage school gardens or monitor plant health, fostering a sense of responsibility.
- A French educator described how students took the initiative to design “quiet zones” within the school’s green yard, promoting relaxation and well-being.



- In North Macedonia, students led a project to revamp a school corner with native plants, creating their own labels and guides for educational use. These efforts contribute not only to learning outcomes but also to stronger emotional connections with the natural environment.

SECTION 4: ROLE OF SCHOOL LEADERSHIP AND COMMUNITY PARTNERSHIPS

The effective implementation of UGS-based education requires more than motivated teachers; it relies on supportive leadership and a network of community partnerships. Data from the focus groups and national research show that school leaders and local stakeholders can either enable or limit outdoor learning practices. This section outlines the roles, challenges, and opportunities associated with leadership and partnerships in UGS initiatives.

Leadership in schools: A key enabler or barrier

Focus group participants consistently emphasized the importance of school principals and leadership teams in supporting outdoor education.

- In North Macedonia, 55% of focus group respondents indicated that school leadership's attitude was a determining factor in whether UGS activities were implemented regularly.
- Some principals provided logistical support, such as adjusting timetables or allocating maintenance resources for gardens and green corners.
- Conversely, others were hesitant to approve outdoor lessons due to concerns about student safety, accountability, or disruption of the standard curriculum.

In Greece, leadership involvement varied widely:

- Some head teachers actively encouraged collaboration with NGOs or municipalities and approved funding for minimal infrastructure improvements (e.g., raised beds, seating).
- Others, however, viewed outdoor learning as an “extra” activity, supporting it only if time allowed beyond curriculum demands.

Collaborations with NGOs and community actors

Across all countries, NGOs, municipalities, and community groups have played a crucial role in compensating for the limitations of school budgets and policy frameworks.

- In Bulgaria, the **Sofia Teaches Outdoors** initiative, supported by the municipality and Safe Playgrounds Association, created a digital map of outdoor learning spaces and inspired schools to share their practices (Ucha na Otkrito, 2022).
- Macedonian NGOs such as **Go Green** partnered with schools to deliver workshops, provide plants and tools, and help set up student-led environmental clubs (Go Green, n.d.).
- In France, the **Oasis Schoolyard Program** is implemented with strong cooperation from municipal authorities and civil society groups, promoting green schoolyards as both educational and climate-resilient spaces (Climate-ADAPT, n.d.).
- Greek environmental education centers collaborate with schools by offering equipment, lesson modules, and expert visits to support UGS-based learning (FEE, 2020).

Parent and volunteer involvement

Community partnerships are not limited to formal organizations—parents and volunteers are also instrumental.

- In Greece and Bulgaria, schools reported organizing community events like "Green Days" or outdoor clean-up activities, with the support of parents and local volunteers.
- Some French schools engaged parents in the design phase of schoolyard transformations, encouraging a shared sense of ownership.
- North Macedonian teachers mentioned that retired community members or local gardeners occasionally helped with maintaining school gardens or leading workshops.

Challenges in leadership and coordination

Despite the benefits, focus group participants raised several concerns:

- In all countries, educators noted a **lack of long-term planning or institutional frameworks** to ensure continuity of UGS efforts.



- The dependence on enthusiastic individuals—whether teachers, principals, or NGO staff—makes programs vulnerable to staff changes or burnout.
- Bureaucratic hurdles were mentioned, especially in Greece and Bulgaria, where schools need approvals from multiple levels of authority for outdoor space modifications or external partnerships.

Examples of good practices

Several cases stood out as examples of how leadership and partnerships create a supportive ecosystem:

- A North Macedonian school integrated UGSs into its school development plan, ensuring budget allocation for maintenance and teacher training.
- In Bulgaria, a partnership between a school and a local business funded the creation of an eco-corner, with students and employees working together on planting activities.
- A French school, through municipal collaboration, held teacher workshops on biodiversity and climate resilience, reinforcing the educational value of green spaces.
- In Greece, a school principal organized a “Learning Outdoors Week” in collaboration with parents, the municipality, and local NGOs, with each day focusing on a different theme (science, arts, civic responsibility).

SECTION 5: HOW BEST PRACTICES WERE ADAPTED TO DIFFERENT CONTEXTS AND NEEDS

Across Europe, successful outdoor education practices have been shaped by a wide range of cultural, institutional, and environmental contexts. Despite differing national systems and school resources, several programs have demonstrated that adaptable, community-based approaches can lead to meaningful learning experiences in urban green spaces. This section presents a synthesis of exemplary practices from North Macedonia, Greece, France, and Bulgaria, highlighting how each has responded to local challenges while maintaining core principles of environmental education.

In **North Macedonia**, two key programs illustrate how outdoor learning can be implemented in both natural parks and urban school settings. The "Young Rangers Program" in Galichica National Park, led by UNICEF North Macedonia, engages over 1,000 students in biodiversity and conservation education through immersive outdoor activities. Teachers are trained to integrate

the program with classroom instruction, and collaboration with park rangers brings expert knowledge directly into the learning process. Post-program surveys reported a 70% improvement in students' environmental knowledge, with increased interest in environmental careers (UNICEF North Macedonia, n.d.).

Meanwhile, the "GLOW Project – Get Out, Learn Outdoors" brings outdoor education into more accessible spaces, such as school gardens and local parks. It empowers teachers and students through interactive, game-based activities and curriculum-linked experiences. With 85% of students reporting higher engagement in environmental topics, the project demonstrates the power of combining community support with experiential learning (Glow Project, n.d.)



[GLOW Project – Get Out, Learn Outdoors](#)

In **Greece**, the Green Schools and Ecological Schools programs, led by the Hellenic Society for the Protection of Nature (EPPF), represent a nationwide effort to transform schools into hubs of sustainability. These initiatives involve students in shaping environmental action plans, establishing eco-committees, and promoting behavioral change through the co-creation of "eco-codes" (EPPF, 2020). Participating schools often implement projects such as composting, water conservation, or schoolyard greening, and successful completion is rewarded with the internationally recognized Green Flag. Importantly, these programs operate with formal approval from the Ministry of Education and promote long-term integration into the school system.

- Example: In one Ecological School, students and teachers worked together to transform their schoolyard into a biodiversity-friendly space, with the installation of raised beds, insect hotels, and shaded rest areas (EPPF, 2020).

The program "GREENSPACES – Youth in Action," a collaboration between WWF Greece and the Hellenic Guiding Society, takes a more civic-oriented approach. It involves young people in the adoption and revitalization of public parks and green zones. Actions are carefully planned in collaboration with local authorities, and participants are guided through each step—from area selection and permits to logistics and outreach. The initiative has helped foster youth leadership and promoted the idea of shared responsibility for urban environments (WWF Hellas & Hellenic Guiding Corps, 2020).

In **France**, the “Classe en Plein Air” program, initiated by the Academy of Paris, has enabled over 100 schools to deliver interdisciplinary lessons in natural settings (Académie de Paris, 2023). With a strong focus on teacher training and municipal collaboration, the initiative allows educators to use nearby parks to teach science, geography, and art. Teachers report improved engagement and academic outcomes, especially in environmental subjects (Education Profiles, n.d.; Climate-ADAPT, n.d.). While not all regions have equal access to green spaces, schools adapt by working closely with local councils to identify and maintain safe outdoor learning areas.

- Example: Some Paris schools redesigned their schoolyards as “Oasis spaces”, integrating shade, vegetation, and rainwater management features to support year-round outdoor education (Paris.fr, n.d.).

The **Forest Schools** approach, widely adopted in the UK and referenced in French best practice studies, offers another adaptable model. Focused on child-led learning in woodland environments, Forest Schools promote resilience, teamwork, and environmental awareness. Trained facilitators lead sessions that integrate bushcraft, nature observation, and problem-solving. Evaluations by the Forest School Association show gains in both academic performance and social-emotional development, with 80% of educators reporting positive changes in student attitudes and behavior (Forest School Association, 2018).

In **Bulgaria**, efforts are being made to extend outdoor learning beyond urban centers. The Safe Playgrounds Association’s “Sofia Teaches Outdoors” platform helps schools locate and share outdoor learning spaces through a public map (Ucha na Otkrito, 2022). In rural areas, the NGO Equilibrium promotes “Practical Outdoor Training,” a project encouraging hands-on civic and environmental learning (Equilibrium, 2022). The activities are designed to reflect local challenges and values, and a comprehensive safety and planning manual supports teachers leading excursions in small communities.

- Example: In one village school, students collaborated with local residents to document plant species in a nearby forest, combining ecological learning with intergenerational exchange (Equilibrium, 2022).

At the national level, Bulgaria’s Strategic Framework for Education (2021–2030) outlines long-term goals for embedding sustainability in the curriculum. Though implementation remains uneven, the document sets the stage for broader support of outdoor learning and lifelong environmental awareness (MoES Bulgaria, 2021).

Collectively, these examples highlight that effective outdoor education is not limited to well-funded or centrally organized systems. Instead, its success lies in adaptability—aligning activities

with local environments, securing community partnerships, and empowering teachers to innovate. Whether in a mountain park, a suburban yard, or a city square, green spaces offer schools a platform for deeper learning, civic engagement, and environmental stewardship.

REFERENCES

Academy of Paris. (2023). *Projets d'intégration des espaces verts dans l'éducation*. Retrieved from <https://www.ac-paris.fr>

City of Paris. (n.d.). *Adaptation strategy: Paris climate and energy action plan*. Climate-ADAPT. Retrieved from <https://climate-adapt.eea.europa.eu/en/metadata/publications/adaptation-strategy-paris-climate-and-energy-action-plan>

City of Paris. (n.d.). *Paris climate and energy action plan*. Retrieved from <https://cdn.paris.fr/paris/2022/06/14/7b5df680f3e4ea4966a2e7c0f1be1c71.pdf>

Dimouli, I., Koumparou, D., & Golfinopoulos, S. K. (2024). From school gardens to community oases: Fostering environmental and social resilience in urban spaces. *Geographies*, 4(4), 687–712. <https://doi.org/10.3390/geographies4040038>

Eco Logic. (2023). *Let's Get Outside Now: Be, Learn, Grow Outdoors (GLOW)*. Retrieved from <https://ecologic.mk/lets-get-outside-now-be-learn-grow-outdoors/>

European Environment Agency. (n.d.). *Paris Oasis schoolyard programme (France)*. Climate-ADAPT. Retrieved from <https://climate-adapt.eea.europa.eu>

Equilibrium. (2022). *Practical outdoor training – Activities in small rural communities*. Retrieved from https://www.eq-bq.org/wp-content/uploads/2015/01/BG_Prakticheskoe_obuchenie_na_otkrito.pdf

FEE – Foundation for Environmental Education. (2020). *Eco-Schools Greece: Annual Report*. Retrieved from <https://www.ecoschools.gr>

Forest School Association. (2018). *Impact of Forest Schools on academic and social outcomes*. Retrieved from <https://www.forestschoollassociation.org>

Go Green. (n.d.). *Home – Go Green - Будь Зелен*. Retrieved from <https://www.bidizelen.org/en/home/>

Hellenic Society for the Protection of Nature (EEPF). (2020). *Greening education partnership*. Retrieved from <https://eepf.gr/greening-education-partnership/>



Ministère de l'Éducation Nationale. (2022). Le programme scolaire de l'éducation au développement durable. Retrieved from <https://www.education.gouv.fr>

Ministry of Education and Science – North Macedonia. (2017). Education Strategy for 2018–2025 and Action Plan. Retrieved from <https://www.teachertaskforce.org/knowledge-hub/north-macedonia-education-strategy-2018-2025-and-action-plan>

Ministry of Education and Science of the Republic of Bulgaria. (2021). Strategic Framework for the Development of Education, Training and Learning in the Republic of Bulgaria (2021–2030). Retrieved from <https://sf.mon.bg/?fileId=3074&h=downloadFile>

Ministry of Education, Religious Affairs and Sports. (2011). Curriculum of the Teaching-Learning Field: "Environment and Education for Sustainable Development" of Compulsory Education. Pedagogical Institute, Greece.

Natural Resources Defense Council. (2024). The Paris Agreement on climate change. Retrieved from <https://www.nrdc.org/resources/paris-agreement-climate-change>

Safe Playgrounds Association. (2022). Ucha na Otkrito – Learn Outdoors platform. Retrieved from <https://uchanaotkrito.bg>

UNICEF North Macedonia. (n.d.). Young Rangers program: Learning in Galichica National Park. Retrieved from <https://www.unicef.org/northmacedonia>

WWF Hellas & Hellenic Guiding Society. (2020). GREENSPACES – Youth in action. Retrieved from https://wwfeu.awsassets.panda.org/downloads/q_s_o_i_neoi_se_drasi_covid_friendly_small_wi_thicons.pdf

MODULE 5: CLEAR AND PRACTICAL GUIDELINES FOR EDUCATORS

ABSTRACT

This module equips educators with practical, step-by-step guidance for effectively integrating Urban Green Spaces (UGSs) into teaching. It covers lesson planning, curriculum alignment, classroom management in outdoor settings, and assessment of learning outcomes. Drawing from the QRiosity Park project's research and focus group findings, the module provides adaptable tools and strategies to help teachers create inclusive, engaging, and curriculum-relevant outdoor learning experiences. It empowers educators to confidently use UGSs as dynamic environments for student growth and interdisciplinary education.

MODULE OBJECTIVES:

- ✓ Provide educators with step-by-step strategies to effectively plan, conduct, and reflect on outdoor learning experiences.
- ✓ Help align outdoor education practices with national curricula.
- ✓ Support teachers in managing diverse learners in outdoor settings.
- ✓ Offer practical tools and resources to simplify and enhance the integration of Urban Green Spaces (UGSs) in daily teaching.
- ✓ Guide educators in assessing learning outcomes from UGS-based education.

INTRODUCTION:

Outdoor education through Urban Green Spaces (UGSs) offers transformative experiences for students, encouraging holistic learning that engages their cognitive, emotional, and physical development. This module provides practical guidance to educators on incorporating UGSs into their teaching practice. It builds on the findings of the QRiosity Park project, which emphasized the need for accessible, actionable resources for educators to implement outdoor learning successfully. The guidance presented here is based on evidence collected through desk research and national focus groups, offering a well-rounded approach to help teachers navigate planning, curriculum alignment, learner management, tool usage, and assessment in UGSs. With this module, educators will gain the confidence and competence needed to transform green spaces into vibrant outdoor classrooms.

SECTION 1: STEP-BY-STEP GUIDANCE FOR PLANNING, EXECUTING, AND REFLECTING ON OUTDOOR LESSONS



Integrating outdoor learning into formal education through Urban Green Spaces (UGSs) involves more than just changing the classroom location—it requires thoughtful preparation, clear educational goals, and structured reflection. Educators must be equipped with practical strategies to make the most of outdoor experiences while ensuring safety, inclusion, and curriculum relevance.

This section outlines a step-by-step guide for planning, executing, and reflecting on outdoor lessons. It emphasizes how UGSs—such as parks, schoolyards, botanical gardens, or urban forests—can serve as dynamic environments for experiential learning. These spaces offer rich opportunities for students to engage their senses, collaborate with peers, and develop a deeper connection to the natural world, which in turn fosters environmental responsibility and personal well-being (Louv, 2008; WHO, 2023).

1. Planning Phase

Purpose: Set clear learning intentions and ensure logistics, safety, and engagement are effectively addressed.

Key actions:

Define Learning Objectives

Begin by identifying curriculum-aligned outcomes. For example, a science lesson might focus on plant life cycles, while a geography lesson might explore land use in urban areas.

Select the Right Location

Conduct a Pre-visit

Visit the site in advance to:

- Map out activity zones
- Identify potential hazards (e.g., water bodies, uneven surfaces)
- Assess weather exposure
- Determine where students will sit, write, or gather information

Prepare Materials and Tools

Depending on the activity, you may need:



- Clipboards, pencils, magnifying glasses, field guides
- Measuring tapes, thermometers, soil kits
- Worksheets or reflection journals

Create a Risk Assessment Plan

Document potential risks and preventive measures. Consider:

- Emergency contact procedures
- First-aid readiness
- Allergies or medical conditions among students

Secure Permissions

Obtain approvals from school administrators, parents/guardians, and—if required—local authorities for using the public space.

Example: A biology teacher in Skopje planned a lesson on native tree species in a nearby park. She conducted a pre-visit, marked tree locations, created identification cards, and prepared a leaf collection worksheet. The lesson was both curriculum-aligned and exploratory.

2. Execution Phase

Purpose: Ensure a smooth and engaging learning experience that balances structure with exploration.

Key actions:

Orientation and Expectations

- Set ground rules for behavior and movement in the green space.
- Introduce the learning objectives and explain how the activities relate to classroom content.

Facilitate Active Learning

- Use inquiry-based methods: Ask students to observe, record, and question.
- Assign roles (e.g., recorder, presenter, materials manager) to encourage participation.
- Break students into small groups for collaborative exploration or experiments.



Incorporate Free Discovery

- Allow time for unstructured exploration. This fosters curiosity and independent learning.
- Provide prompts or scavenger hunts for younger students to guide observation.

Ensure Safety

- Monitor students regularly and maintain visual contact.
- Encourage hydration and sun protection.
- Respond promptly to any incidents or discomfort.

Example: During a sustainability-themed lesson in a Bulgarian urban park, students mapped sources of litter and interviewed local passers-by about recycling habits. They later presented their findings using posters created on-site.

3. Reflection Phase

Purpose: Solidify learning, reinforce connections to the curriculum, and improve future practice.

Key actions:

- **Student Debriefing**

Use reflective questions: *What did you learn today? What surprised you? What would you like to explore more?*

Encourage group sharing or peer-to-peer feedback.

- **Classroom Connection**

Reinforce concepts back in the classroom using complementary materials (e.g., discussion, journaling, art projects).

Assign follow-up tasks: research, presentations, or community engagement.

- **Collect Feedback**

Use simple surveys or open-ended questions to gather student perspectives.

Ask what worked well, what was confusing, and what they would change.

- **Educator Reflection**



Log observations about student engagement, time management, and material effectiveness.

Note improvements needed for future sessions (e.g., better tools, adjusted pacing).

Example: A Greek teacher who led an outdoor poetry class using nature as inspiration asked students to reflect on how being outside influenced their creativity. Most reported higher engagement and fewer distractions.

By embedding this three-phase approach—planning, execution, and reflection—into their teaching practice, educators can maximize the potential of UGSs as learning environments. Outdoor lessons not only enhance academic learning but also promote social-emotional growth, physical activity, and environmental stewardship—key dimensions of education for sustainable development (UNESCO, 2023).

SECTION 2: CURRICULUM ALIGNMENT: ADAPTING UGS LEARNING TO NATIONAL STANDARDS

One of the primary concerns of educators when implementing outdoor learning is how to align these activities with the existing curriculum. For Urban Green Spaces (UGSs) to be fully integrated into school life, their use must support learning goals and reflect national or regional educational standards. Aligning UGS-based learning with curricula ensures its legitimacy, supports learning outcomes, and encourages school leadership and policy-level buy-in.

Outdoor education through UGSs can support learning across subjects such as science, geography, arts, and even language or citizenship education. The key is to design activities that are intentional and purposeful, not merely recreational.

Why Curriculum Alignment Matters

Curriculum alignment ensures that outdoor lessons:

- Meet specific learning objectives tied to national education standards.
- Are recognized and valued within formal school evaluation processes.
- Contribute to core competencies like critical thinking, collaboration, and environmental literacy.
- Are scalable and sustainable within school routines and teaching timetables.

According to the European Commission (2022), embedding sustainability into curriculum frameworks across subject areas is key to building climate literacy. UGSs offer a unique setting for applying these goals in practice.



Strategies for Aligning UGS Activities with Curriculum

Educators can follow several simple steps to ensure their outdoor learning plans are relevant and aligned with the national curriculum:

1. Map UGS Activities to Learning Outcomes

Identify which learning outcomes from your subject area can be taught or reinforced outdoors. For example:

Science: Observing local plant and animal life for biodiversity studies.

Math: Measuring distances, angles, or temperatures and analyzing data.

Geography: Mapping land use, studying microclimates, or understanding urban infrastructure.

2. Interdisciplinary Integration

UGS-based education is ideal for cross-curricular projects. A single visit can touch multiple subjects:

Science + Language: Students observe insects and write descriptive paragraphs.

Art + Environmental Studies: Use natural materials for sculptures and learn about their ecological importance.

Citizenship + Geography: Discuss civic responsibility and urban green planning.

3. Use Key Competencies as Anchors

In many European countries, competencies like collaboration, digital literacy, environmental awareness, and creativity are emphasized. Outdoor learning supports all these. Design activities that:

Require group problem-solving (teamwork).

Use tech tools like tablets or apps (digital competence).

Promote nature-based inquiry (science literacy and environmental responsibility).

4. Document the Link

When planning your lesson, include a short section on how each part of the activity supports specific curriculum standards. This makes it easier for administrators, parents, or inspectors to see its relevance.

Examples of Curriculum Integration Across Countries

From the QRiosity Park desk research and focus groups, several examples were collected that illustrate how UGSs can enhance curriculum delivery:

Greece: In the national biology curriculum, ecosystem exploration is mandatory. Teachers use local parks to study food chains, insect habitats, and plant reproduction. Activities are documented and assessed in the same way as classroom-based experiments.

France: The “Classe en Plein Air” program enables teachers to conduct math lessons in local parks, calculating area and perimeter using real-life examples such as garden plots and footpaths.

North Macedonia: Teachers from agricultural schools use school gardens to align lessons with vocational curriculum outcomes in subjects like crop production and sustainable farming practices.

Bulgaria: Outdoor lessons in school yards focus on geometry (using shadows and sun angles), recycling initiatives (science and civics), and storytelling inspired by natural surroundings (literacy and art).

Adapting Outdoor Activities for Primary vs. Secondary Levels

Primary School: Activities should focus on discovery and sensory engagement. For example, "nature scavenger hunts" can support vocabulary building and classification skills in young learners.

Secondary School: Students can take part in data collection and analysis activities, apply scientific methodology, or engage in debates on urban planning and sustainability based on field observations.

Promoting Sustainability Literacy

The integration of sustainability topics is now a key feature of European curriculum reforms. Outdoor education provides an ideal platform for students to:

- Understand the impact of human activity on local ecosystems.
- Learn about resource conservation and sustainable living.



- Reflect on their role in protecting natural spaces.

This alignment between UGS-based learning and sustainability goals not only meets curriculum demands but also fosters active citizenship—one of the core objectives of the QRiosity Park project.

Quick Tips for Educators

- ✓ Use curriculum mapping tools (see templates in Module 5 Annex).
- ✓ Start with one subject and expand to interdisciplinary learning over time.
- ✓ Collaborate with colleagues to co-plan outdoor units.
- ✓ Document student work (photos, journals, videos) to demonstrate learning.

SECTION 3: MANAGING DIVERSE LEARNERS IN OUTDOOR SETTINGS

Urban Green Spaces (UGSs) offer a dynamic and inclusive learning environment that can benefit all students, including those with diverse educational needs. However, outdoor settings also present unique challenges for classroom management, differentiation, and accessibility. This section provides strategies for creating equitable outdoor learning experiences that support every student, regardless of ability, background, or learning style.

Defining Diversity in the Outdoor Classroom

Diversity refers not only to differences in culture, language, or socioeconomic background but also to students' physical abilities, learning styles, neurodiversity, emotional needs, and behavioral profiles. Managing this diversity in an open, unpredictable setting like a park or school garden requires careful planning, inclusive teaching strategies, and flexible approaches.

According to UNICEF (2021), inclusive outdoor education “creates a more accessible and supportive learning environment, especially for students who face challenges in traditional classrooms.” This aligns with the QRiosity Park project’s mission to ensure UGS-based education benefits all learners.

Key Considerations for Inclusive Outdoor Learning

1. Know Your Learners

Before planning an outdoor activity, conduct a learner profile review:

- Identify students who may need physical support, sensory accommodations, or modified tasks.



- Check for medical needs or allergies (e.g., bee stings, pollen, asthma).
- Understand behavioral patterns or social-emotional needs that might be impacted in less structured environments.

Tip: Create individual learning profiles that include outdoor activity notes for quick reference.

2. Adapt Instructional Strategies

To ensure all learners can participate and succeed:

- **Use Multiple Modalities:** Combine visual, auditory, and kinesthetic inputs (e.g., verbal instructions + picture cards + hands-on tasks).
- **Scaffold Tasks:** Break complex activities into smaller steps, offer guided support, and build independence gradually.
- **Provide Choice:** Allow students to select from a menu of activity roles or tasks (e.g., sketching vs. measuring vs. observing).
- **Use Differentiated Materials:** Some students may benefit from simplified worksheets, large print, tactile maps, or checklists.

Example: During a biodiversity walk, one group can record insects with a mobile app, another can draw leaf patterns, and another can collect fallen objects for a nature collage.

3. Promote Peer Collaboration

Pairing or grouping students strategically helps build teamwork and social skills:

- Mix abilities to promote peer tutoring.
- Rotate leadership roles within small groups.
- Assign "buddies" to support mobility-impaired or younger students.

Inclusive Practice: Encourage all voices in group discussions by using talking sticks, circle seating, or turn-taking cards.

4. Create Predictable Routines

Outdoor environments can be overstimulating for students with attention difficulties or anxiety. To mitigate this:

- Establish clear expectations and behavioral rules beforehand.
- Use visual schedules or timers to support transitions.



- Maintain consistent start and end rituals (e.g., meet under the same tree, begin with mindfulness or a group chant).

Tip: Practice routines in the classroom before moving outdoors. For example, rehearse walking in pairs, listening for cues, or finding designated stations.

5. Ensure Physical Accessibility and Safety

Not all UGSs are created equal in terms of accessibility. Consider the following:

- Is the terrain suitable for students with mobility needs?
- Are there accessible restrooms or shaded rest areas?
- Are sensory-sensitive students supported (e.g., earplugs, shaded hats, quiet zones)?

If necessary, adapt the site or choose more inclusive locations. Collaborate with local municipalities if improvements are needed (e.g., accessible paths or seating).

Health & Safety: Carry an emergency contact list, first-aid kit, and allergy medications. Brief all students on safety signs or emergency procedures.

Behavioral Management in Outdoor Settings

- Outdoor learning can lead to heightened energy and unpredictability. Set students up for success by:
- Co-creating rules and consequences before going outside.
- Using non-verbal cues (e.g., hand signals, whistles) to manage attention.
- Applying positive reinforcement (e.g., praise for focus, team spirit).
- Preparing for transitions with advance warnings (e.g., “5 minutes left at this station”).

Real-World Example: In North Macedonia, a teacher used a “green zone” sign to let students know where they could safely roam during free exploration without direct supervision.

Reflecting Equity in Assessment

Remember to adapt how you assess learning outdoors:

- Use oral reflections for students who struggle with writing.
- Allow creative outputs (e.g., photo journals, models, or posters).
- Use rubrics that recognize effort, participation, and collaboration—not just factual recall.



Outdoor education, when thoughtfully planned, can reduce learning barriers and open new pathways for student engagement and inclusion. The flexibility of UGSs allows educators to tailor activities to suit learners of all abilities and backgrounds. By emphasizing preparation, differentiation, and safety, teachers can ensure that no student is left behind in the green classroom.

SECTION 4: TOOLS, TEMPLATES, AND CHECKLISTS FOR TEACHERS

To support educators in planning and delivering outdoor learning experiences, especially those integrating Urban Green Spaces (UGSs), having structured and adaptable tools is essential. Tools and templates not only save time but also bring consistency, safety, and clarity to lessons conducted outside the traditional classroom setting. This section offers a practical set of tools—ranging from planning templates and safety checklists to digital aids—tailored to the needs of teachers working in urban or semi-urban green environments.

Why Tools Matter in Outdoor Learning

Outdoor education involves a range of logistical and pedagogical considerations that may be unfamiliar to teachers used to indoor settings. Tools can:

- Simplify lesson preparation and ensure curricular alignment.
- Help educators address health, safety, and accessibility concerns.
- Provide consistency in student assessment and classroom management.
- Increase teacher confidence and reduce the mental workload of organizing outdoor sessions.

The QRiosity Park focus groups highlighted that many teachers feel motivated but uncertain when it comes to organizing UGS-based lessons. Tools and templates emerged as a key solution to this barrier (QRiosity Park Focus Group Summary, 2025).

Essential Tools for Outdoor Lesson Planning

Here is a list of foundational tools every educator can adapt and apply to their own school context.

Lesson Planning Template for Outdoor Education

This template helps educators align UGS-based lessons with learning objectives and curriculum standards. Sections typically include:

- Learning goals and subject links



- Required materials
- Chosen UGS location and justification
- Key activities and timeline
- Differentiation strategies
- Safety considerations
- Assessment methods

Template available in Annex - Practical Tips/Tools.

Risk Assessment Checklist

Outdoor learning requires proactive risk identification and mitigation. Use this checklist before each session to evaluate:

- Physical risks (e.g., uneven terrain, traffic, weather)
- Health risks (e.g., allergies, sun exposure, water availability)
- Emergency preparedness (first-aid kit, contact list, communication plan)
- Accessibility for all learners
- Required permissions (from school or municipality)

See Annex - Practical Tips/Tools.

Outdoor Materials Inventory

Preparation is key when taking students outdoors. A standard materials inventory helps ensure no essential items are forgotten:

- Clipboards, pens/pencils, and waterproof paper
- Measuring tools (rulers, thermometers, tape measures)
- Hand sanitizer and wipes
- Binoculars or magnifying glasses
- Emergency contacts and medical information
- QR code scanners (or tablets with QRiosity Park app)

Tip: Assemble a class "grab-and-go" outdoor kit that stays stocked year-round.

Templates to Support Student Engagement

Providing students with structured tools also helps maintain focus and accountability during outdoor lessons.



Student Observation & Reflection Sheets

Encourage learners to track and analyze their experience through:

- Sketching and describing natural features
- Recording weather data or plant/animal sightings
- Reflecting on what they learned or felt
- Generating new questions or ideas

Templates for different age groups available in Annex - Practical Tips/Tools.

Group Role Assignment Cards

Assigning roles can improve participation, especially in larger groups. Suggested roles include:

- **Explorer:** leads the group and keeps them on track
- **Recorder:** writes down observations and findings
- **Speaker:** presents findings back to the class
- **Safety Scout:** keeps an eye on group behavior and safety

Laminate reusable role cards to save time.

Digital Tools for Tech-Enhanced Outdoor Learning

In the digital age, educators can leverage technology to enrich outdoor learning—especially in UGSs.

QRiosity Park App

At the heart of the project, this mobile app offers an engaging, gamified experience where students can scan QR codes located in parks or green spaces to access:

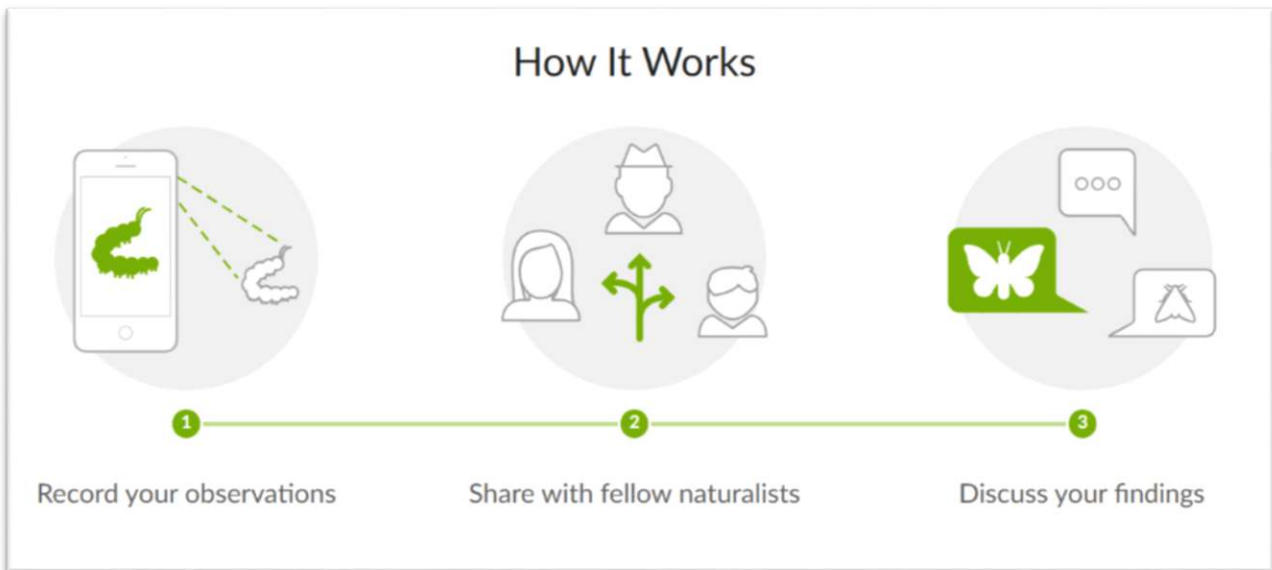
- Eco-challenges and quizzes
- Environmental facts and case studies
- Augmented reality features

- Educators can use the app to plan scavenger hunts or project-based learning units.

Supplementary Apps

- **iNaturalist:** Identify plants and animals using photos.
- **Google Earth:** Map local UGSs and plan routes.

- **Pl@ntNet**: Visual database for plant identification.
- **Padlet/Seesaw**: For student reflection uploads and group work sharing.



iNaturalist, picture obtained from [iNaturalist](https://www.inaturalist.org/)

Tips for Using Tools Effectively

- Familiarize students with tools before going outdoors (practice indoors first).
- Customize templates for the age, language level, and learning needs of your class.
- Store digital and print copies of key documents in a shared teacher folder.
- Encourage students to co-create tools (e.g., design their own observation sheets).
- Share successful templates and ideas with colleagues to build a collaborative toolkit.

With the right tools and templates, outdoor education becomes not just feasible but highly effective and enjoyable. These resources allow educators to transition smoothly from classroom to UGS, ensuring structure, safety, and pedagogical rigor in open-air learning environments. The tools listed here—many of which are editable and included in the annex of this handbook—form a starting point for schools looking to adopt or expand their outdoor teaching practices.

SECTION 5: METHODS OF ASSESSING STUDENT LEARNING OUTCOMES FROM OUTDOOR ACTIVITIES

Assessment is a critical component of any educational practice, including outdoor learning. While traditional classroom assessments typically focus on knowledge acquisition, outdoor education—



especially in Urban Green Spaces (UGSs)—offers broader dimensions of learning that encompass skills, attitudes, behaviors, and emotional engagement. Therefore, assessment methods need to be adaptable, holistic, and reflective of both academic and experiential learning goals.

This section outlines effective and practical assessment methods that educators can use to evaluate student learning in outdoor settings. These methods are aligned with curriculum standards while also acknowledging the unique benefits of outdoor education: hands-on exploration, collaboration, environmental awareness, and personal growth.

Why Assess Outdoor Learning?

Assessment in UGS-based education serves multiple purposes:

- **Documentation:** Captures what students have learned and how they've engaged with the content.
- **Reflection:** Encourages both students and teachers to think critically about the experience.
- **Improvement:** Helps educators refine teaching strategies and adapt activities to better meet learning objectives.
- **Accountability:** Provides evidence for school leadership and stakeholders that outdoor education meets curriculum goals.
- **Inclusion:** Gives students multiple pathways to demonstrate understanding, especially those who thrive outside traditional classroom settings (QRiosity Park Focus Group Summary, 2025).

Types of Assessment Suitable for Outdoor Education

1. Formative Assessment

Used during the learning process to monitor progress and adjust instruction accordingly.

Examples:

Teacher observations during group activities

Student learning journals or sketchbooks

Quick oral reflections (e.g., “one thing I noticed,” “one thing I learned”)

Entry and exit slips with targeted questions



Tip: Use a checklist to track student participation, inquiry, and teamwork during fieldwork.

2. Summative Assessment

Used at the end of a learning activity to evaluate what students have achieved.

Examples:

Student presentations on what they observed/discovered

Poster or digital portfolio summarizing their UGS exploration

Short quizzes that test applied knowledge from the outdoor activity

Creative outputs (e.g., poems, videos, stories) inspired by UGS experiences

Ensure that these tasks align with subject-specific standards for content and skills.

3. Peer and Self-Assessment

Encourages metacognition and social learning by involving students in evaluating their own and their peers' performance.

Examples:

Students rate their own group contribution using rubrics

Peer feedback on observation skills or teamwork

Reflection sheets asking students to evaluate their effort, learning, and behavior

These methods foster ownership of learning and promote emotional intelligence.

Assessment Criteria for Outdoor Learning

Because outdoor education develops a wide range of competencies, assessments should include a combination of:

Cognitive Skills: Ability to observe, record, and explain phenomena.

Practical Skills: Competence in using tools, measuring, collecting data, or interacting with nature.

Social Skills: Communication, collaboration, and leadership within group settings.



Attitudes and Values: Environmental awareness, curiosity, respect for nature, and sustainability behavior.

Designing Assessment Tools for UGS-Based Lessons

To ensure consistency and quality in evaluating student performance, educators can use the following tools:

Observation Rubrics

Create clear criteria to assess student engagement, critical thinking, and application of knowledge in real time.

Sample Criteria:

Observes details in the environment independently

Asks relevant questions

Applies scientific vocabulary correctly

Participates constructively in group work

Tip: Use a 3- or 5-point scale for simplicity.

Student Reflection Journals

Support students in documenting their learning process, thoughts, and observations.

Prompts to Include:

What did I see/hear/feel today?

What surprised me?

How does today's experience connect to what I learned in class?

What questions do I still have?

Tip: A template is available in Annex - Practical Tips/Tools.

Portfolio Assessment

Encourage students to compile various artifacts over time:



Photos of their field activities

Nature sketches or maps

Notes from group discussions

Completed worksheets

Teacher feedback

Tip: Digital or printed portfolios allow assessment of progress over a series of outdoor lessons.

Inclusive Assessment Strategies

In diverse classrooms, it's essential to ensure that all students have equitable opportunities to demonstrate learning.

Suggestions:

Offer oral assessments for students with writing difficulties.

Allow multimodal expression (videos, drawings, models).

Use visual checklists and task cards.

Adjust expectations according to individual education plans (IEPs).

Tip: Differentiated assessments foster inclusion and recognize varied learner strengths.

Best Practices for Outdoor Assessment

- ✓ *Integrate assessment into the learning activity, rather than treating it as a separate event.*
- ✓ *Give students frequent feedback that is constructive and specific.*
- ✓ *Involve learners in setting learning goals and discussing criteria beforehand.*
- ✓ *Celebrate all forms of progress—not just academic gains, but growth in confidence, curiosity, and care for the environment.*

Outdoor learning in UGSs offers rich opportunities for student development. By using a diverse set of assessment methods—observational, reflective, and performance-based—educators can meaningfully capture student learning outcomes. These assessments not only validate outdoor education as a rigorous teaching approach but also ensure it is inclusive, curriculum-aligned, and impactful.



PRACTICAL TIPS/TOOLS:

1. Outdoor Lesson Planning Template

Lesson Title:
Subject/Curriculum Area:
Grade Level:
Learning Objectives:
UGS Location and Justification:
Required Materials:
Key Activities and Timeline:
Differentiation Strategies:
Safety Considerations:
Assessment Methods:

2. Risk Assessment Template

Activity Title:
Location:
Date of Activity:
Potential Hazards:
Risk Level (Low/Medium/High):
Preventive Measures:
Responsible Staff:
Emergency Procedures:

3. Outdoor Materials Inventory Checklist

- Clipboards and Writing Materials
- Measuring Tools (Rulers, Thermometers)
- Field Guides / Observation Tools
- First-Aid Kit



- | |
|--|
| - Water and Sun Protection |
| - Emergency Contact List |
| - QR Code Scanners or Tablets with QRiosity Park App |
| - Clipboards and Writing Materials |

4. Student Observation & Reflection Sheet

Name:
Date:
Location:
What I observed:
What I found interesting:
Questions I have:
How this connects to what I learned in class:

5. Group Role Assignment Cards

- | |
|---|
| - Explorer: Leads and keeps the group on task |
| - Recorder: Writes down observations and findings |
| - Speaker: Presents findings to the class |
| - Safety Scout: Monitors safety and behavior |

6. Curriculum Mapping Template

Subject Area:
Curriculum Standard / Objective:
UGS-Based Activity Description:
Key Competencies Addressed:
Assessment Method:



7. Observation Rubric for Outdoor Learning

Criteria (Rate 1-5):
- Participation and Engagement
- Observation and Inquiry Skills
- Use of Vocabulary / Subject Knowledge
- Collaboration and Teamwork

8. Student Reflection Journal Template

Name:
Date:
Today I observed:
Something that surprised me:
I learned that:
A question I still have is:
Next time, I want to:

9. Portfolio Assessment Checklist

- Photos of Outdoor Activities
- Nature Sketches / Drawings
- Notes from Group Discussions
- Completed Worksheets
- Teacher Feedback / Comments



REFERENCES

European Commission. (2022). Proposal for a Council Recommendation on learning for environmental sustainability. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022DC0011>

Louv, R. (2008). Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder. Algonquin Books.

QRiosity Park Project. (2025). Desk Research Report. Internal project document.

QRiosity Park Project. (2025). Focus Group Summary Report. Internal project document.

UNESCO. (2023). Education for Sustainable Development: A roadmap. <https://unesdoc.unesco.org/ark:/48223/pf0000374802>

UNICEF. (2021). Outdoor Learning for Children. <https://www.unicef.org/outdoorlearning>

World Health Organization. (2023). Urban green spaces and health. <https://www.who.int/publications/i/item/9789240057735>

MODULE 6: ACTIONABLE STEPS FOR INCORPORATING UGSS INTO TEACHING METHODS

ABSTRACT

Urban Green Spaces (UGSs) represent a vital resource for experiential, inclusive, and sustainable education. This study presents a cross-national framework for integrating UGSs into elementary teaching methods, based on collaborative field research and pilot programs in Greece, Bulgaria, North Macedonia, and France. Drawing on environmental pedagogy and place-based education theories, we outline five actionable steps for institutionalizing UGS-based teaching. Findings show that UGSs enhance interdisciplinary learning, environmental literacy, and student engagement when strategically embedded in curriculum, teacher training, and community partnerships.

MODULE OBJECTIVES

- ✓ Design and implement lesson plans that effectively utilize Urban Green Spaces (UGSs) as dynamic outdoor classrooms.
- ✓ Develop interdisciplinary learning activities that connect subjects such as science, arts, geography, and citizenship education through nature-based experiences.
- ✓ Promote students' holistic well-being by integrating activities in UGSs that support physical health, mental focus, and emotional resilience.
- ✓ Foster environmental awareness and encourage the development of sustainable attitudes and behaviors among students.
- ✓ Leverage seasonal and local characteristics of green spaces to create meaningful, place-based project learning opportunities tailored to the school's context.

INTRODUCTION

Urban Green Spaces (UGSs)—including parks, gardens, urban forests, and schoolyards—are increasingly recognized as multifunctional assets in educational development. They offer real-world contexts for learning that support not only cognitive development but also social-emotional and physical well-being (Louv, 2005; Chawla, 2015). While UGSs are often used informally, few systems have institutionalized their role within national curricula.

This part examines how Greece, Bulgaria, North Macedonia, and France—four European countries with diverse educational systems and ecological contexts—collaborated between 2023 and 2025 to formulate and implement actionable steps for incorporating UGSs into elementary school teaching methods.

SECTION 1: LESSON PLANNING AND ACTIVITY DESIGN USING UGSS

Ecosystem services are benefits that humans receive from ecosystems. People living in urban areas depend on ecosystem services both within their boundaries and from surrounding areas. Locally generated services have substantial impacts on human health and quality of life, and planning is essential for their preservation and restoration (Boland and Hunhammar [1999](#); Woodruff and BenDor [2016](#); Cortinovis and Davide [2018](#)). Ecosystem services have been categorized in a variety of ways (Daily [1997](#); World Health Organization [2005](#); Gomez-Baggethun et al. [2013](#); Elmqvist et al. [2015](#)), but most organizational systems focus on four main groupings: provisioning, regulating, supporting and cultural. Each of these types of ecosystem services are impacted by human activities and thinking about different categories of services can provide a cognitive framework for understanding and exploring what may be missing or degraded within an urban area.



National Garden of Athens, picture obtained from [wikipedia](#)

Urban ecosystems tend to be highly modified by humans, with consequent reductions in many of the services provided to humans (Douglas and James [2015](#)). Biodiversity and ecosystem complexity are especially altered, with many urban ecosystems left vulnerable to perturbations

(both natural and anthropogenic) and potentially less resilient in the face of changes (World Health Organization [2005](#); Ahem [2011](#); McPhearson et al. [2015](#)). Human interventions in the form of land-use planning, management, conservation and restoration are often needed to improve lost or degraded ecosystem services and counteract ecosystem disservices (Shackleton et al. [2016](#); Larson et al. [2019](#)). Ecosystem disservices encompass the negative impacts of natural systems and processes on human well-being, and are a currently debated topic in environmental literature (see Blanco et al. [2019](#)).

In urban areas, services and disservices that directly impact human health and well-being are particularly important. For example, as land-use change and global climate change continue to advance, urban ecosystem services are needed to mitigate the effects of warming through green infrastructure in the form of green roofs, street trees, and parks (Bowler et al. [2010](#); Li et al. [2017](#)). Additionally, these green areas provide air purification, noise reduction and contribute to a sense of place (Nowak et al. [2006](#); Peters et al. [2010](#); Dzhambov and Donka [2015](#)). To many humans, these ecosystem services are invisible and undervalued, and are only noted in their absence.

Including urban ecosystem services in college classes should be prioritized to better educate students about their potential future contributions to the greening of urban areas. To illustrate ecosystem services to students and involve them in the planning process, we have designed activities to help students actively explore their own roles in the urban environment, and to “see” the invisible services that surround them. To increase students’ awareness of ecosystem services, particularly in a built environment they are familiar with, this activity asks them to examine a space on their campus and develop plans to redesign it to increase ecosystem services and decrease ecosystem disservices. Students identify missing or degraded services and then propose changes to enhance services. They then write proposals, exchange ideas, and re-reflect on their proposals. These written assignments and reflections highlight the importance of the invisible ecosystem services and reinforce the importance of viewing urban areas through an ecosystem lens. The activity helps students recognize relationships between human well-being and urban environments, and specifically illustrates the concept of feedback relationships in which humans affect the environment through design and the environment that in return affects human well-being. The activity also asks them to reflect on the importance of involving community partners in the design and upkeep of urban green spaces (Rademacher et al. [2019](#))

After completing this activity, students should be able to:

- Describe ecosystem services and disservices, and explain their importance to humans
- Identify both global and local threats to ecosystem services, particularly in urban settings



- Discuss how humans modify and impact ecosystem services in urban areas and how planning can minimize or eliminate negative human impacts and disservices, and enhance beneficial impacts
- Identify present and absent ecosystem services in a local urban landscape and suggest strategies and actions to manage, restore, or enhance targeted ecosystem services

Instructor preparation and materials

The instructor pre-identifies an area of the local campus or nearby urban area that is underused, poorly designed, or neglected to target for re-design. If visiting the area is desirable within the same class period as the introductory lecture, the area should be nearby. Alternatively, the instructor could have the visit occur in a separate class meeting. The instructor could take photos of the site to include in the presentation, but this is not essential. The area does not need to be a specific size, but rather should be a place in need of improvement for both use by humans and restoration of ecosystem services. For example, we have identified a neglected quadrangle between two buildings that has poor drainage, plantings of non-native species, poor aesthetics, and a steep slope on one side with offices on the others. Most students do not even know the area exists.

To carry out this activity, the instructor will need to provide a 20 to 30 minute overview on ecosystem services, to (A) describe what they are and why they are important, (B) describe the threats and challenges to ecosystem services, particularly in urban environments, and (C) lead a discussion of what types of services might be present, degraded, or absent from the campus or surrounding urban environment. This overview could be done in a classroom space or on-site when the class visits the space to be redesigned. Good resources for information about humans and urban ecosystem services include: the ecosystem services chapter of *Urban Ecology* by Douglas and James ([2015](#)), Costanza et al. ([2014](#)) updated paper on the value of ecosystem services; Kubiszewski et al. ([2017](#)), the Millennium Ecosystem Assessment (World Health Organization [2005](#)), the ecosystem services chapter of *Sustaining Life* (Melillo and Sala [2008](#)), or most Environmental Science textbooks. An additional resource is the Campus Ecology program of the National Wildlife Federation ([2020](#)). Campus or local area maps, digital aerial photos, and satellite imagery of the campus over time are also useful to illustrate pre and post campus development and may be useful to students to illustrate the chosen study location. Use Google Earth, ESRI's Living Atlas and ESRI's Green Infrastructure Project (ESRI [2020a](#), [b](#)) for digital imagery and maps to launch this discussion.

Additionally, the instructor will need to prepare a written prompt for the students to respond to for their writing assignment. If desired, additional concepts could be added, including asking the

students to reflect on opportunities for community engagement. The written instructions provide a record for students to refer back to, and includes explanations of what the assignment is about and what they should turn in and when.

Learning activities

After the introduction (20-30 minutes), the instructor and students visit the space that will be redesigned. Alternatively, the presentation may be given while on site to reduce travel time and to incorporate examples from the specific environment. The instructor should allow the students to explore the space making general observations and taking notes (5-10 min), then should lead a discussion about how it is currently used and its ecological characteristics. Key questions might include:

1) Who uses this space and how and when is it used?

2) What ecosystem services and disservices exist here? What is missing or degraded?

3) What are the plants, soil, water and built features in this area, and are they desirable in terms of aesthetics, services and sustainability?

If time allows, the instructor may also want to prompt students to think about who is in charge of planning and maintaining these areas and how proposals are processed on their campus. Involving key campus planners as part of this exercise adds complexity, but a real world element as well, as successful urban green space planning includes community involvement. Depending on the mixture of students in the course, the instructor may also want to address the idea of multifunctionality, and how adding one service may detract from others (e.g. Hansen and Pauleit [2014](#)). At the end of the discussion, students are given the written assignment that explains what should be turned in.

Students turn in their plans and essays, and the instructor provides feedback, focusing particularly on ecosystem services and how they are represented in the plans for improving the area. If a second iteration of design is included in the class, students are then encouraged to form groups to work on the next version of the plans, integrating their expertise and debating the relative merits of their plans. This may be done in class or outside of class as a homework assignment.

Extensions and additional connections

Additional activities or topics could be added or extended, depending on the overall emphasis and learning outcomes of the course. For us, working in groups and finding ways to integrate



multiple viewpoints/disciplines was a main goal, but courses with students from a single discipline or with more advanced backgrounds may find other topics or activities enriching. Here are a few suggestions:

Ask the students to build a budget for the improvements that they are considering. Be sure to consider upkeep by building and grounds personnel, who will likely be tasked with maintaining any plantings or structures. If possible, budget justifications should include a cost benefit analysis, to help make the economic case for these ecological improvements (often a limiting factor, but demonstrating a reasonable payback period helps). If desired, the instructor could give the students a budget cap.

Brainstorm with students about who would need to be involved to make their changes, such as buildings and grounds personnel and any oversight committees. Can these improvements be integrated in other courses or service projects? What other groups on campus have a stake in this area, or might be able to meaningfully contribute? How should they be included?

Consider whether small grants on campus are available for student projects, and if so have the students write a grant proposal to fund some of their ideas for improving the location on campus.

Ask students to think about the public spaces in their hometown or in a nearby city. What other spaces could be redesigned to include more ecosystem services? Who owns these spaces and how are they currently used? What would need to be done to involve local citizens in a redesign that incorporated more ecosystem services into urban public spaces? Who makes the decisions about how the space is used, and do they currently involve local citizens in those decisions? What is that decision making process and is it equitable to all stakeholders?

Advanced classes could include more complex topics as the class allows, such as examining the use of non-native species in promoting ecosystem services (Schlaepfer et al. [2011](#)), approaching the topic through the lens of biogeochemistry (Pataki et al. [2011](#)), or a more thorough examination of ecosystem disservices (Campagne et al. [2018](#); Blanco et al. [2019](#)).

This lesson can be used to support additional topics in the course or in associated courses, such as environmental health, conservation biology, plant biology, hydrology or geographical information systems.

Reflections and conclusions

Students often have good suggestions for how to make the space more sustainable or green, but have a harder time tying their plans to ecosystem services directly. First drafts often lack details

such as specific native plants and a consideration of the light, moisture and soil requirements needed to establish native plant communities. Often, students don't try to integrate ideas to address multiple ecosystem services, such as combining improved drainage systems with bioswales to enhance biodiversity and provide habitat, or pairing solar panels and bug hotels with green roofs to optimize space and integrate functions. Comments from instructors on the first draft of student work can help push students towards examining services more directly (e.g. they will often include a feature, but not say what ecosystem service(s) it enhances), and our experience has been that the second draft is often improved in this area. If time allows, a second draft where students work together in teams is recommended to help students better develop their ideas and draw on the strengths of different majors.

Depending on the backgrounds and past experiences of the students, they will bring various perspectives and knowledge to the exercise. For example, art and design students may bring expertise in design, lighting, and use of space (e.g. drawings, plans, textures, etc.), while environmental science students may focus on specific species for plantings or gardens, soil and ground cover, while engineers may prioritize technological solutions (e.g. solar panels, structures or drainage solutions). Students may find their proposed changes conflict with other proposals, restrict current use of the space, or exacerbate existing problems, leading to discussions and adaptations. Thus, the second draft draws more collectively on the expertise of the group and explores tradeoffs. The revisions often are more appreciative of the diversity, complexity, and connectedness of various ecosystem services (and disservices) because students see and incorporate each other's work and link initiatives to try and maximize (and justify) the number of services provided (see Supplement [1](#) – Student project example).

Benefits of this assignment to student understanding have appeared in later work in our course. Having critically thought about and researched how to enhance a specific local area, our students have engaged in more enriched discussions about ecosystem services represented in an area when we go on field trips or examine case studies. This assignment in particular has directly enhanced subsequent written assignments. For example, the final project of the course (Storymaps focusing on specific aspects of urban ecology) integrates multiple environmental, social and cultural components in the examination of a sustainability issue (see Hane and Korfmacher [2020](#) for details). Students draw from their redesign project to envision how issues might involve solutions that address multiple ecosystem services while also appreciating the specific needs of local communities.

Overall, we have found that this activity helps students “see” ecosystem services within the urban environment, and gives them practical ideas about the process by which those services might be



enhanced through human interventions. They also benefit from exposure to alternative viewpoints, and finding ways to integrate those multiple ideas into a shared vision. Rather than being a theoretical or abstract idea, ecosystem services thus takes on a personal meaning when students experience the green space themselves, and have a role in improving the environment they live in.

SECTION 2: SAMPLE INTERDISCIPLINARY ACTIVITIES IN SCIENCE, ARTS, GEOGRAPHY, AND CITIZENSHIP EDUCATION

Design a future-friendly neighborhood that includes sustainable features and urban greenery UGSs are inherently interdisciplinary. Sample activities implemented across the four countries include:

- **Science:** Biodiversity scavenger hunts (France) where students documented insects, birds, and plants, later classified using dichotomous keys. Students collect data on biodiversity (e.g., number of plant/insect species), measure air temperature, and soil pH. Discuss renewable energy, water recycling, and native plants.
- **Arts:** Leaf-print collages and seasonal sculpture installations using natural materials in North Macedonian schoolyards. Create posters, photo collages, or environmental sculptures expressing the importance of green spaces. A public exhibition or presentation to school/local community. Construct a 3D model or digital design using recycled materials or software (e.g., Minecraft Education Edition).
- **Geography:** Urban tree mapping projects (Bulgaria) integrating GPS tools and geospatial learning to explore natural distribution in cityscapes. Use maps to locate the park and analyze how the space fits within the urban layout (e.g., accessibility, land use).
- **Citizenship Education:** Organizing clean-up campaigns and tree-planting ceremonies in Greece, fostering civic responsibility and collective action. Interview local park users or create a community survey to understand different perspectives (e.g., elderly, children). Hold a classroom “town council” where students debate priorities (e.g., more green spaces vs. housing).

Actionable Step: Design modular interdisciplinary units using UGSs as primary contexts, aligned with SDGs and UNESCO’s Education for Sustainable Development (ESD) goals. Class vote on best design; submit to a local urban planning initiative or contest. Investigate microhabitats in the schoolyard or local park and raise awareness of small-scale biodiversity.

Outcome

Share findings with younger grades or on social media for awareness. Students reflect on their interactions with nature and take action to improve or protect green areas. A printed or digital



class journal to distribute or display. Explore how nature influences personal and collective identity. Gallery walk with presentations explaining each student's connection to nature.

SECTION 3: PROMOTING STUDENTS' PHYSICAL, MENTAL, AND EMOTIONAL WELL-BEING THROUGH NATURE

The cross-national initiative revealed significant gains in student well-being linked to regular outdoor engagement:

- **Physical Health:** Increased movement during “green breaks” and structured outdoor lessons improved physical activity levels.
- **Mental Health:** Nature-based mindfulness activities (e.g., “quiet listening circles” in French urban parks) reduced anxiety and improved focus.
- **Emotional Development:** Role-play and storytelling in natural settings nurtured empathy and resilience among students, particularly those with learning difficulties.

Educators reported calmer classroom environments following outdoor sessions, along with improved cooperation among peers.

Actionable Step: Incorporate green space routines into daily school life (e.g., weekly nature walks, outdoor journaling) as part of social-emotional learning strategies.

SECTION 4: BUILDING ENVIRONMENTAL AWARENESS AND SUSTAINABLE BEHAVIOURS

All four countries reported an increase in students' environmental knowledge and pro-sustainability behaviors following UGS-based interventions:

- **Behavioral Shifts:** French students began initiating recycling efforts at home after participating in “waste-watch” activities in their school gardens.
- **Eco-literacy:** Bulgarian children learned to identify local flora and fauna, developing a stronger sense of ecological stewardship.
- **Systems Thinking:** North Macedonian students mapped water flow in urban parks, linking it to discussions on climate resilience and urban planning.

Actionable Step: Embed UGS-based activities in citizenship and ethics curricula to develop environmental agency and long-term behavioral change.

Key Elements of Building Environmental Awareness

1. Environmental Knowledge



- Understanding ecosystems, biodiversity, climate change, and human impact on nature.
- Foundational but **not sufficient alone** to change behavior.

2. Emotional Connection to Nature

- **Nature connectedness** (feeling part of the natural world) is a strong predictor of pro-environmental behavior.
- Activities like outdoor education, urban green space interaction, and nature journaling enhance this bond.

3. Values and Attitudes

- Emphasis on **biospheric values** (concern for the environment itself).
- Programs should nurture **intrinsic motivation** rather than rely solely on rules or guilt.

4. Behavioral Skills and Efficacy

- Teaching students **how** to act sustainably (e.g., how to recycle properly, how to reduce water use).
- Build **self-efficacy** (belief that their actions matter).

Sample Educational Activities

Eco-Stewardship Projects

- Adopt-a-park or schoolyard greening project.
- Combines hands-on environmental restoration with citizenship and science education.

Behavior Mapping & Personal Audits

- Students log their energy use, water consumption, waste production.
- Discuss collective impact and create personal sustainability pledges.

Critical Media Literacy

- Analyze ads, social media, or news articles for environmental messages.
- Builds critical thinking and awareness of greenwashing.

Educational Programs & Models



- **Eco-Schools (FEE)** – A global program integrating environmental education into all school operations.
- **UNESCO Education for Sustainable Development (ESD)** – Framework for incorporating sustainability across subjects.

SECTION 5: USING SEASONAL AND LOCAL OPPORTUNITIES FOR PROJECT-BASED LEARNING

Using **seasonal and local opportunities for project-based learning (PBL)** is a powerful way to make education more engaging, relevant, and rooted in real-world experiences. Below are strategies and ideas for leveraging the seasons and your local environment to create meaningful PBL opportunities:

Spring Project Ideas:

- **School Garden or Farm-to-Table Project**
Students can research, plan, and plant a garden using local crops. Incorporate math (measuring plots, budgets), science (plant biology), and writing (garden journals or promotional materials).
- **Watershed Exploration**
Partner with local environmental groups to study nearby rivers or streams. Projects could include pollution tracking, water quality testing, or public education campaigns.
- **Community Cleanup & Sustainability Plan**
Organize a local cleanup (e.g., Earth Day). Students document environmental issues and propose sustainable solutions to present to city councils or local businesses.

Summer

- **Local History Documentary**
Use the longer days and open community calendars to research and produce documentaries about local legends, landmarks, or cultural events.
- **Outdoor STEM Challenges**
Have students design and build solar ovens, weather stations, or eco-habitats. Incorporate data collection and analysis.
- **Festival Partnerships**
Collaborate with summer events (e.g., farmers' markets, music festivals). Students can create marketing materials, run booths, or conduct interviews and surveys.

Fall



- **Harvest and Nutrition Study**
Explore local harvests and connect with agricultural communities. Projects could include recipe development, food mapping, or health awareness campaigns.
- **Civic Engagement Projects**
Tie into local elections or public hearings. Students might analyze platforms, develop voting guides, or host candidate Q&As.
- **Weather & Climate Tracking**
Study seasonal changes and collect weather data. Students can create models to predict weather patterns or design weather-resistant shelters.

Winter

- **Energy Efficiency Audit**
Examine energy use at school or at home during colder months. Students can assess insulation, calculate costs, and suggest efficiency improvements.
- **Oral Histories & Cultural Celebrations**
Connect with elders or local cultural groups to preserve holiday traditions or stories. Projects may include podcasts, books, or exhibitions.
- **Emergency Preparedness Campaign**
Study local emergency systems for winter storms or natural disasters. Students create plans, kits, and awareness campaigns.

Tips for Implementation

1. **Partner Locally:** Collaborate with community organizations, businesses, and experts (e.g., local farmers, meteorologists, artists).
2. **Use Real Problems:** Frame projects around authentic challenges or needs specific to your area.
3. **Include Reflection:** Ensure students reflect on how seasonal/local contexts shaped their learning.
4. **Interdisciplinary Integration:** Combine science, humanities, math, and arts to deepen the learning.
5. **Documentation:** Have students create portfolios, blogs, or public presentations to showcase their work.

Urban Green Spaces are not merely recreational landscapes—they are untapped educational environments with the potential to transform how students engage with curriculum, community, and the natural world. The collaborative work between Greece, Bulgaria, North Macedonia, and France demonstrates that when UGSs are systematically included in lesson planning, interdisciplinary practice, student well-being, sustainability efforts, and seasonal learning, they become powerful drivers of inclusive, dynamic, and resilient education

Discussion

Findings demonstrate that UGS-based education improves:

- **Academic performance:** especially in science and environmental literacy.
- **Socio-emotional skills:** including collaboration and mindfulness.
- **Equity in access to nature:** particularly for urban and disadvantaged students.

Challenges included infrastructure gaps (e.g., lack of shade/sanitation), policy fragmentation, and teacher hesitation due to unfamiliarity with outdoor instruction.

The cross-border initiative between Greece, Bulgaria, North Macedonia, and France illustrates a scalable model for embedding UGSs into elementary education. By institutionalizing curriculum linkages, teacher training, and community partnerships, UGSs can become a sustainable pedagogical asset, not a seasonal enrichment activity.

REFERENCES

- Ahem J (2011) *From fail-safe to safe-to-fail: sustainability and resilience in the new urban world.* *Landsc Urban Plan* 100(4):341–343. <https://doi.org/10.1016/j.landurbplan.2011.02.021>
- Blanco J, Dendoncker N, Barnaud C, Sirami C (2019) *Ecosystem disservices matter: towards their systematic integration within ecosystem service research and policy.* *Ecosyst Serv* 36:100913. <https://doi.org/10.1016/j.ecoser.2019.100913>
- Boland P, Hunhammar S (1999) *Ecosystem services in urban areas.* *Ecol Econ* 29(2):293–301. [https://doi.org/10.1016/S0921-8009\(99\)00013-0](https://doi.org/10.1016/S0921-8009(99)00013-0)
- Bowler D, Buyung-Ali L, Knight T, Pullin A (2010) *Urban greening to cool towns and cities: a systematic review of the empirical evidence.* *Landsc Urban Plan* 97(3):147–155. <https://doi.org/10.1186/1471-2458-10-456>
- Campagne CS, Roche PK, Salles JM (2018) *Looking into Pandora's box: ecosystem disservices assessment and correlations with ecosystem services.* *Ecosyst Serv* 30(A):126–136. <https://doi.org/10.1016/j.ecoser.2018.02.005>
- Cortinovis C, Davide G (2018) *Ecosystem services in urban plans: what is there, and what is still needed for better decisions.* *Landsc Ecol* 70(2018):298–312. <https://doi.org/10.1016/j.landusepol.2017.10.017>

- Costanza R, de Groot R, Sutton P, van der Ploeg S, Anderson SJ, Kubiszewski I, Farber S, Kerry Turner R (2014) Changes in the global value of ecosystem services. *Glob Environ Chang* 26:152–158. <https://doi.org/10.1016/j.gloenvcha.2014.04.002>
- Daily GC (1997) *Introduction: what are ecosystem services?* In *daily GC (ed) nature's services: societal dependence on natural ecosystems*. Island Press, Washington DC, pp 1–10
- Douglas I, James P (2015) *Urban ecosystem services and the assessment of their values in urban ecology*. Routledge, Milton Park, UK
- Dzhambov A, Donka D (2015) Green spaces and environmental noise perception. *Urban For Urban Green* 14:1000–1008. <https://doi.org/10.1016/j.ufug.2015.09.006>
- Elmqvist T, Setälä H, Handel SN, van der Ploeg S, Aronson J, Blignaut J, Gomez-Baggethun E, Nowak D, Kronenburg J, de Groot R (2015) Benefits of restoring ecosystem services in urban areas. *Curr Opin Environ Sustain* 14:101–108. <https://doi.org/10.1016/j.cosust.2015.05.001>
- ESRI (2020a) Building green infrastructure in the US: a framework for sustainable growth. Online: <https://www.esri.com/en-us/industries/green-infrastructure/overview>. Accessed: 28 May 2020
- ESRI (2020b) ArcGIS Living Atlas of the World. Online: <https://livingatlas.arcgis.com/en/> accessed: 28 May 2020
- Gomez-Baggethun E, Gren Å, Barton DN, Langemeyer J, McPhearson T, O'Farrell P, Andersson E, Hamstead Z, Kremer P (2013) *Urban ecosystem services in urbanization, biodiversity and ecosystem services: challenges and opportunities: a global assessment*. Elmqvist T et al. editors. Springer, Netherlands
- Hane E, Korfmacher K (2020) Integrating multiple perspectives in an urban ecology course. *Landsc Online* 82:1–14. <https://doi.org/10.3097/LO.202082>
- Hansen R, Pauleit S (2014) From multifunctionality to multiple ecosystem services? A conceptual framework for multifunctionality in green infrastructure planning for urban areas. *Ambio* 43(4):516–529. <https://doi.org/10.1007/s13280-014-0510-2>
- Kubiszewski I, Costanza R, Anderson S, Sutton P (2017) The future value of ecosystem services: global scenarios and national implications. *Ecosyst Serv* 26(2017):289–301. <https://doi.org/10.1016/j.ecoser.2017.05.004>

- Larson K, Corley E, Andrade R, Hall SJ, York A, Meerow S, Coseo P, Childers DL, Hondula D (2019) Subjective evaluations of ecosystem services and disservices: an approach to creating and analyzing robust survey scales. *Ecol Soc* 24(2):7. <https://doi.org/10.5751/ES-10888-240207>
- Li F, Liu X, Zhang X, Zhao D, Liu H, Zhou C, Wang R (2017) Urban ecological infrastructure: an integrated network for ecosystem services and sustainable urban systems. *Journal of Cleaner Production* 163:512–518. <https://doi.org/10.1016/j.jclepro.2016.02.079>
- McPhearson T, Andersson E, Elmqvist T, Frantzeskaki N (2015) Resilience of and through urban ecosystem services. *Ecosyst Serv* 12:152–156. <https://doi.org/10.1016/j.ecoser.2014.07.012>
- Melillo J, Sala O (2008) *Ecosystem services in sustaining life: how human health depends on biodiversity*. Chivian E and Bernstein A, editors. Oxford University Press, NY
- National Wildlife Federation (2020) Campus ecology resource center. Online: <https://www.nwf.org/EcoLeaders/Campus-Ecology-Resource-Center>. Accessed 28 May 2020
- Nowak D, Crane D, Stevens J (2006) Air pollution removal by urban trees and shrubs in the United States. *Urban For Urban Green* 4(3–4):115–123. <https://doi.org/10.1016/j.ufug.2006.01.007>
- Pataki D, Carreiro MM, Cherrier J, Grulke NE, Jennings V, Pincetl S, Pouyat RV, Whitlow TH, Zipperer WC (2011) Coupling biogeochemical cycles in urban environments: ecosystem services, green solutions and misconceptions. *Front Ecol Environ* 9(1):27–36. <https://doi.org/10.1890/090220>
- Peters K, Elands B, Buijs A (2010) Social interactions in urban parks: stimulating social cohesion. *Urban For Urban Green* 9(2):93–100. <https://doi.org/10.1016/j.ufug.2009.11.003>
- Rademacher A, Cadenasso ML, Pickett ST (2019) From feedbacks to coproduction: toward an integrated conceptual framework for urban ecosystems. *Urban Ecosyst* 22(1):65–76. <https://doi.org/10.1007/s11252-018-0751-0>
- Schlaepfer MA, Sax DF, Olden JD (2011) The potential conservation value of non-native species. *Conserv Biol* 25(3):428–37. <https://doi.org/10.1111/j.1523-1739.2010.01646.x>

- Shackleton CM, Ruwanza S, Sinasson S et al (2016) *Unpacking Pandora's box: understanding and categorising ecosystem disservices for environmental management and human wellbeing*. *Ecosystems* 19:587–600. <https://doi.org/10.1007/s10021-015-9952-z>
- Woodruff SC, BenDor TK (2016) *Ecosystem services in urban planning: comparative paradigms and guidelines for high quality plans*. *Landsc Urban Plan* 152:90–100. <https://doi.org/10.1016/j.landurbplan.2016.04.003>
- World Health Organization. (2005). *Ecosystems and human well-being : health synthesis : a report of the Millennium Ecosystem Assessment / Core writing team: Carlos Corvalan, Simon Hales, Anthony McMichael ; extended writing team: Colin Bulter ... [et al.] ; review editors: José Sarukhán ... [et al.]*. World Health Organization. <https://apps.who.int/iris/handle/10665/43354>
- Louv, R. (2005). *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*.
- Sobel, D. (2004). *Place-Based Education: Connecting Classrooms and Communities*.
- Chawla, L. (2015). *Benefits of nature contact for children*. *Journal of Planning Literature*, 30(4), 433–452.
- UNESCO. (2020). *Education for Sustainable Development: A Roadmap*.
- Kolb, D. A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*.
- UGSs are inherently interdisciplinary. Sample activities implemented across the four countries include:
- Science: Biodiversity scavenger hunts (France) where students documented insects, birds, and plants, later classified using dichotomous keys.
- Arts: Leaf-print collages and seasonal sculpture installations using natural materials in North Macedonian schoolyards.
- Geography: Urban tree mapping projects (Bulgaria) integrating GPS tools and geospatial learning to explore natural distribution in cityscapes.
- Citizenship Education: Organizing clean-up campaigns and tree-planting ceremonies in Greece, fostering civic responsibility and collective action.



- *Actionable Step: Design modular interdisciplinary units using UGSs as primary contexts, aligned with SDGs and UNESCO's Education for Sustainable Development (ESD) goals.*
- *Buck Institute for Education (PBLWorks) – High-quality resources on project-based learning.*
- *UNESCO's Education for Sustainable Development (ESD) – Integrates global competencies and action.*
- *David Sobel's Place-Based Education – Advocates connecting curriculum with local community and environment.*



MODULE 7. STRATEGIES TO ENHANCE OUTDOOR LEARNING EXPERIENCES

ABSTRACT

This module explores innovative strategies to enrich outdoor learning through the integration of digital technologies. Focusing on tools such as QR codes, mobile applications like QRiosity Park, and augmented reality (AR), the module demonstrates how technology can transform outdoor spaces into dynamic educational environments. It highlights the role of gamification and digital storytelling in increasing student engagement and provides approaches to harmonize digital and environmental literacy. Through real-world case studies and best practices, educators are equipped with practical insights and training models to implement tech-enhanced outdoor learning. The module aims to empower teachers with a clear framework for creating student-centered, interactive experiences that foster critical thinking, sustainability, and a deeper connection to nature.

MODULE OBJECTIVES

Educators will learn how to integrate **QR codes, mobile apps, and augmented reality** into outdoor learning, leveraging **gamification and storytelling** to enhance engagement. They will develop strategies to blend **digital and environmental literacy**, analyze **case studies** to replicate best practices, and explore **teacher training models** for tech-enhanced education. Ultimately, they will gain a **clear roadmap** for fostering **interactive, student-centered learning**, promoting **critical thinking, sustainability, and innovation**.

INTRODUCTION

Introduction. Technology transforms outdoor education, making learning more immersive, interactive, and engaging. This module explores how digital tools—such as QR codes, mobile apps, and augmented reality (AR)—enhance outdoor experiences, fostering environmental awareness and digital literacy.

The QRiosity Park project leverages these technologies to create interactive learning environments, enabling students to explore nature while accessing real-time digital content. Through gamification, storytelling, and tech-supported exploration, educators can inspire curiosity and deepen students' connection to the environment.

This module serves as a practical guide, providing educators with strategies, case studies, and tools to integrate tech-enhanced outdoor learning into their teaching. It supports the handbook's



mission to equip educators with innovative approaches that combine technology and environmental education effectively.

SECTION 1: ROLE OF TECHNOLOGY: QR CODES, MOBILE APPS, AUGMENTED REALITY

Technology has transformed outdoor education, making learning more interactive, engaging, and accessible. Tools such as QR codes, mobile applications, and augmented reality (AR) enhance exploration, provide real-time information, and create immersive experiences. These innovations bridge the gap between digital literacy and environmental literacy, allowing learners to interact with nature in new and meaningful ways.

QR Codes: Enhancing Accessibility & Engagement

Definition & Functionality

QR codes (Quick Response codes) are two-dimensional barcodes that store information, such as text, URLs, or multimedia content. When scanned using a smartphone or tablet, QR codes provide instant access to educational materials, interactive maps, and guided experiences.

Applications in Outdoor Education

Interactive Learning Stations: QR codes placed in parks, museums, and nature reserves can link to videos, quizzes, and historical facts, enriching the learning experience.

Self-Guided Tours: Visitors can scan QR codes to access audio guides, augmented reality overlays, and expert insights about local ecosystems.

Citizen Science Projects: QR codes can connect students to data collection platforms, allowing them to contribute to environmental research.

Case Example

A study by Lin et al. (2021) demonstrated how QR codes enhance augmented reality experiences by linking users to customized digital content, improving engagement in educational and commercial settings.

Mobile Apps. Expanding Learning Beyond the Classroom

Definition and Functionality



Mobile applications provide on-the-go access to educational resources, gamified learning experiences, and real-time environmental data. These apps integrate GPS tracking, multimedia content, and interactive challenges to make outdoor learning more dynamic.

Applications in Outdoor Education

Gamified Exploration: Apps like QRiosity Park encourage students to complete challenges, earn rewards, and explore nature through interactive storytelling.

Augmented Reality Field Guides: Mobile apps allow users to identify plants, animals, and geological formations using AI-powered recognition tools.

Collaborative Learning: Students can share observations, participate in discussions, and contribute to digital field journals via mobile platforms.

Case Example

Yoon (n.d.) explored how QR codes and mobile apps enhance mobile augmented reality (MAR), enabling seamless integration of digital content into outdoor learning experiences.

Augmented Reality (AR). Creating Immersive Learning Experiences

Definition & Functionality

Augmented reality (AR) overlays digital elements onto the real world, allowing users to interact with virtual objects, animations, and simulations through their mobile devices. AR enhances visualization, engagement, and comprehension in outdoor education.

Applications in Outdoor Education

Virtual Ecosystem Exploration: AR apps enable students to observe endangered species, simulate environmental changes, and interact with 3D models.

Historical & Cultural Storytelling: AR can reconstruct historical landmarks, indigenous traditions, and archaeological sites, providing deeper context.

STEM Learning in Nature: AR tools help students visualize scientific concepts, such as photosynthesis, water cycles, and geological formations.

Case Example

Kan et al. (2011) highlighted how QR codes and AR applications improve public engagement in education, gaming, and advertising, demonstrating their potential for interactive outdoor learning.

The integration of QR codes, mobile apps, and augmented reality into outdoor education fosters engagement, accessibility, and experiential learning. These technologies empower educators to create dynamic, interactive, and immersive experiences, bridging the gap between digital and environmental literacy. As advancements continue, outdoor education will become more personalized, data-driven, and globally connected, ensuring that students develop critical thinking skills and a deeper appreciation for nature.

SECTION 2: GAMIFICATION AND DIGITAL STORYTELLING IN OUTDOOR SETTINGS

Technology has revolutionized outdoor education, making learning more interactive, engaging, and immersive. Two powerful approaches—gamification and digital storytelling—enhance outdoor learning by fostering motivation, participation, and deeper connections with nature. These methods transform traditional outdoor experiences into dynamic, narrative-driven adventures, encouraging learners to explore, interact, and retain knowledge more effectively.

Gamification. Definition & Role in Outdoor Learning

Gamification refers to the application of game mechanics—such as points, challenges, rewards, and competition—into non-game contexts to enhance engagement and motivation (Gul & Bilgin, 2020). In outdoor education, gamification encourages exploration, problem-solving, and collaboration, making learning fun and interactive.

Key Gamification Elements in Outdoor Education

Challenges and Missions: Learners complete tasks or quests related to environmental topics.

Points and Rewards: Participants earn badges, achievements, or incentives for completing activities.

Leaderboards and Social Interaction: Encourages collaboration and friendly competition among students.

Progress Tracking: Learners monitor their growth and accomplishments over time.

Case Example: Gamified Nature Trails



A study by Giakalaras (2016) explored how gamification enhances outdoor learning experiences. In nature reserves, QR codes linked to interactive challenges encouraged visitors to identify species, solve environmental puzzles, and earn digital badges. This approach boosted engagement and retention, making outdoor learning more immersive and rewarding.

Digital Storytelling. Definition and Role in Outdoor Learning

Digital storytelling combines multimedia elements—such as videos, audio, animations, and interactive narratives—to create engaging, educational experiences (Giakalaras, 2016). In outdoor settings, digital storytelling brings environmental concepts to life, allowing learners to connect emotionally with nature through compelling narratives.

Key Digital Storytelling Elements in Outdoor Education

Personalized Narratives: Learners create stories based on their outdoor experiences.

Augmented Reality (AR) & Virtual Reality (VR): Enhances storytelling with immersive visuals.

Interactive Story Maps: Digital platforms allow students to document and share their journeys.

Multimedia Integration: Combines text, images, videos, and voice recordings for deeper engagement.

Case Example. AR-Enhanced Storytelling in Parks

Kan et al. (2011) demonstrated how augmented reality (AR) storytelling enhances outdoor education. In historical parks, AR overlays provided interactive narratives, allowing visitors to experience past events through digital reconstructions. This approach deepened engagement and historical understanding, making outdoor learning more immersive and memorable.

The Intersection of Gamification and Digital Storytelling

Combining gamification and digital storytelling creates powerful outdoor learning experiences. By integrating game mechanics with narrative-driven content, educators can:

- ✓ Encourage exploration through story-driven quests and missions.
- ✓ Enhance retention by immersing learners in interactive narratives.
- ✓ Foster collaboration through team-based storytelling challenges.
- ✓ Promote environmental awareness by connecting learners emotionally to nature.

Example: Gamified Storytelling in Outdoor Education



A wildlife conservation program used gamified storytelling to teach students about endangered species. Learners embarked on a digital adventure, solving environmental puzzles and documenting their journey through interactive storytelling apps. This approach boosted engagement, critical thinking, and environmental stewardship.

The Future of Gamification & Digital Storytelling in Outdoor Education

Gamification and digital storytelling transform outdoor learning, making it interactive, engaging, and emotionally impactful. As technology advances, outdoor education will continue evolving, integrating AI, AR, and immersive storytelling to create dynamic, personalized learning experiences. By embracing these methods, educators can inspire curiosity, foster environmental awareness, and enhance student engagement in outdoor settings.

SECTION 3: BLENDING DIGITAL LITERACY WITH ENVIRONMENTAL LITERACY

In today's rapidly evolving world, digital literacy and environmental literacy are essential competencies that shape how individuals interact with technology and the natural world. While digital literacy enables people to access, evaluate, and create information using digital tools, environmental literacy fosters awareness, understanding, and responsible action toward environmental sustainability. Integrating these two literacies creates a powerful synergy, equipping learners with the skills to navigate digital spaces while making informed decisions about environmental issues.

Defining Digital Literacy and Environmental Literacy

Digital Literacy

Digital literacy refers to the ability to find, evaluate, and communicate information using digital technologies. It encompasses skills such as:

Critical thinking in assessing online information.

Responsible digital citizenship in using technology ethically.

Technical proficiency in navigating digital platforms.

Environmental Literacy

Environmental literacy involves understanding ecosystems, sustainability, and human impact on nature. It includes:

Knowledge of environmental issues such as climate change and pollution.



Ability to analyze ecological data and make informed decisions.

Commitment to sustainable practices in daily life.

Blending these literacies ensures that individuals can use digital tools to engage with environmental topics, fostering critical thinking and responsible action.

The Importance of Integrating Digital and Environmental Literacy

1. Enhancing Environmental Awareness Through Digital Tools

Online platforms provide access to real-time environmental data, helping users track climate trends.

Interactive apps allow students to monitor air quality, biodiversity, and carbon footprints. Social media campaigns raise awareness about sustainability initiatives and eco-friendly practices.

2. Using Digital Literacy to Combat Misinformation

Fact-checking tools help users verify environmental claims and debunk myths.

Data visualization software enables learners to interpret climate statistics accurately.

AI-powered research tools assist in analyzing environmental reports and scientific findings.

3. Promoting Sustainable Digital Practices

Reducing e-waste by encouraging responsible disposal and recycling of electronics.

Advocating for energy-efficient technology to minimize carbon footprints.

Encouraging digital activism to support environmental policies and conservation efforts.

Case Studies: Successful Integration of Digital and Environmental Literacy

1. Digital Mapping for Conservation

Organizations use GIS (Geographic Information Systems) to track deforestation, wildlife migration, and climate patterns. This technology enables data-driven conservation strategies and helps policymakers make informed decisions.

2. Gamified Environmental Education



Educational apps like EcoChallenge and Earth Hero use gamification to teach sustainability. Users complete eco-friendly tasks, earn rewards, and track their environmental impact through interactive challenges.

3. Citizen Science and Crowdsourced Data

Platforms like iNaturalist and Globe Observer allow individuals to collect and share ecological data, contributing to scientific research on biodiversity and climate change.

Challenges and Future Directions

Challenges in Blending Digital and Environmental Literacy

The digital divide limits access to environmental education resources.

Misinformation spreads rapidly, making fact-checking essential.

Over-reliance on technology may reduce direct engagement with nature.

Future Directions

Integrating digital literacy into environmental curricula to enhance critical thinking.

Developing AI-powered sustainability tools for data-driven environmental solutions.

Expanding digital storytelling initiatives to promote eco-conscious narratives.

The Power of Blended Literacy

Blending digital literacy with environmental literacy empowers individuals to navigate digital spaces responsibly while making informed environmental decisions. By leveraging technology for sustainability, educators, policymakers, and communities can drive meaningful change, ensuring a more informed and eco-conscious society.

SECTION 4: CASE EXAMPLES OF USING DIGITAL TOOLS IN OUTDOOR EDUCATION

Technology has transformed outdoor education, making learning more interactive, engaging, and accessible. Digital tools such as mobile apps, augmented reality (AR), QR codes, and geospatial technologies enhance exploration, provide real-time information, and create immersive experiences. These innovations bridge the gap between digital literacy and environmental literacy, allowing learners to interact with nature in new and meaningful ways.

The Role of Digital Tools in Outdoor Education



Definition and Context

Digital tools in outdoor education refer to technological applications that support learning, engagement, and environmental awareness. These tools help educators and students access real-time data, interact with nature, and document observations in innovative ways.

Key Benefits

- ✓ Enhances engagement by making outdoor learning interactive and immersive.
- ✓ Provides real-time environmental data for scientific research and exploration.
- ✓ Encourages collaboration through digital storytelling and citizen science projects.
- ✓ Supports accessibility by allowing learners to explore nature remotely.

Case Examples of Digital Tools in Outdoor Education

1. Augmented Reality (AR) for Wildlife Exploration

Tool Used: AR-based mobile apps (e.g., Seek by iNaturalist)

Application: AR overlays allow students to identify plants and animals in real-time.

Impact: Enhances biodiversity awareness and scientific observation skills.

Example: A study by Kan et al. (2011) demonstrated how AR storytelling enhances outdoor education by providing interactive narratives in historical parks. Visitors could experience past events through digital reconstructions, deepening engagement and historical understanding.

2. QR Codes for Interactive Learning Trails

Tool Used: QR codes linked to educational content

Application: QR codes placed in parks, museums, and nature reserves provide instant access to videos, quizzes, and expert insights.

Impact: Encourages self-guided learning and interactive exploration.

Example: Giakalaras (2016) explored how QR codes enhance outdoor learning experiences. In nature reserves, QR codes linked to interactive challenges, encouraging visitors to identify species, solve environmental puzzles, and earn digital badges.

3. Gamified Environmental Education Apps

Tool Used: Mobile apps with gamification features (e.g., EcoChallenge, Earth Hero)



Application: Users complete eco-friendly tasks, earn rewards, and track their environmental impact.

Impact: Boosts engagement, critical thinking, and environmental stewardship.

Example: A wildlife conservation program used gamified storytelling to teach students about endangered species. Learners embarked on a digital adventure, solving environmental puzzles and documenting their journey through interactive storytelling apps.

4. Geospatial Technologies for Conservation

Tool Used: GIS (Geographic Information Systems)

Application: Tracks deforestation, wildlife migration, and climate patterns.

Impact: Enables data-driven conservation strategies and informed policymaking.

Example: Organizations use GIS mapping to monitor climate change effects and biodiversity loss, helping scientists and policymakers make informed environmental decisions.

Challenges and Future Directions in Using Digital Tools in Outdoor Education

Digital divide limits access to technology-based learning resources.

Misinformation spreads rapidly, making fact-checking essential.

Over-reliance on technology may reduce direct engagement with nature.

Future Directions

Integrating AI-powered sustainability tools for data-driven environmental solutions. Expanding digital storytelling initiatives to promote eco-conscious narratives.

Developing immersive AR experiences for interactive outdoor learning.

The Power of Digital Tools in Outdoor Education

Digital tools transform outdoor learning, making it interactive, engaging, and emotionally impactful. As technology advances, outdoor education will evolve, integrating AI, AR, and immersive storytelling to create dynamic, personalized learning experiences. By embracing these methods, educators can inspire curiosity, foster environmental awareness, and enhance student engagement in outdoor settings.



SECTION 5: TEACHER TRAINING MODELS FOR TECH-ENHANCED OUTDOOR LEARNING

As technology continues to shape education, tech-enhanced outdoor learning has emerged as a powerful approach to engage students in interactive, immersive, and experiential learning. However, successful implementation requires effective teacher training models that equip educators with the necessary skills to integrate digital tools, augmented reality (AR), mobile applications, and gamification into outdoor education.

Defining Tech-Enhanced Outdoor Learning

Tech-enhanced outdoor learning refers to the integration of digital tools into outdoor education to enhance engagement, accessibility, and interactivity. This approach combines traditional nature-based learning with modern technology, allowing students to explore, analyze, and interact with their environment in innovative ways.

Key Benefits

- ✓ Enhances student engagement through interactive digital experiences.
- ✓ Provides real-time environmental data for scientific research and exploration.
- ✓ Encourages collaboration through digital storytelling and citizen science projects.
- ✓ Supports accessibility by allowing learners to explore nature remotely.
- ✓ Teacher Training Models for Tech-Enhanced Outdoor Learning

1. Technology-Mediated Outdoor Learning (TMOL) Model

Focus: Integrates mobile learning, AR, and digital mapping into outdoor education.

Application: Teachers use interactive apps to guide students through biodiversity exploration.

Impact: Improves student engagement and understanding of ecological concepts.

Example: A study by Eriksson et al. (2023) examined how technology-mediated outdoor learning enhances biodiversity education for primary school teachers. Results showed that teachers gained a deeper understanding of biodiversity and improved their ability to estimate species diversity in outdoor settings.

2. Mastery of Active and Shared Learning Processes for Techno-Pedagogy (MASLEPT) Model

Focus: Supports collaborative learning, problem-solving, and classroom follow-up.

Application: Teachers engage in ongoing professional development to integrate technology into outdoor learning.

Impact: Encourages active participation and shared learning experiences.

Example: Borko (2004) emphasized the importance of continuous teacher training in technology integration. The MASLEPT model ensures that teachers receive ongoing support, fostering confidence and expertise in tech-enhanced outdoor education.

3. Cross-Disciplinary Teaching Model

Focus: Encourages interdisciplinary collaboration in outdoor learning.

Application: Teachers integrate environmental science, geography, and digital literacy into outdoor lessons.

Impact

Strengthens student engagement and cross-subject learning.

Example: Neville et al. (2022) developed a cross-disciplinary teaching model to support outdoor learning opportunities. The study highlighted how teachers can plan and facilitate immersive outdoor experiences that align with curriculum outcomes.

Challenges

Challenges in Teacher Training for Tech-Enhanced Outdoor Learning

Lack of digital literacy among educators.

Limited access to technology in outdoor settings.

Resistance to integrating digital tools into traditional outdoor education.

Future Directions

Develop AI-powered sustainability tools for data-driven environmental solutions.

Expand digital storytelling initiatives to promote eco-conscious narratives.

Enhance teacher training programs with immersive AR experiences.

The Future of Teacher Training in Outdoor Education

Effective teacher training models are essential for integrating technology into outdoor learning. By adopting technology-mediated learning, collaborative pedagogy, and interdisciplinary approaches, educators can enhance student engagement, improve environmental literacy, and foster innovation in outdoor education. As technology continues to evolve, teacher training



programs must adapt, ensuring that educators are equipped with the skills and confidence to create dynamic, tech-enhanced outdoor learning experiences.

PRACTICAL TIPS/TOOLS

Practical Resources for Educators. Tech-Enhanced Outdoor Learning

To help educators integrate technology into outdoor education, here are examples of tools and templates that can be directly used in lessons. These resources provide structure, ensure safety, and support effective planning for interactive, tech-enhanced learning experiences.

1. Activity Planning Templates

Outdoor Lesson Planner

Helps teachers structure activities by setting learning objectives, digital tools, and assessment methods.

Student Exploration Guide

Provides a step-by-step framework for students to engage with digital tools (QR codes, mobile apps, AR) in outdoor settings.

Tech-Integration Checklist

Ensures smooth integration of mobile learning, gamification, and environmental research tools into outdoor lessons.

An example for an activity planning template might include sections for:

Lesson Objective - What students will learn.

Digital Tools Used - QR codes, mobile apps, GIS mapping, AR overlays.

Student Task List - Observations, interactive challenges, collaborative storytelling.

Assessment Criteria - How student engagement and learning outcomes will be measured.

2. Safety Checklists for Outdoor Tech-Based Learning

Pre-Activity Safety Guide - covers weather conditions, student supervision, and risk mitigation.

Technology Safety Guidelines - ensures proper use of devices, battery management, and data privacy when using digital tools.



Emergency Protocols for Outdoor Learning - provides quick response guidelines in case of accidents or tech failures.

Example - a safety checklist might include:

Device Protection: Ensure students' mobile devices are properly charged and secured.

Environmental Considerations: Check for safe terrain, weather conditions, and potential hazards.

Data Privacy Awareness: Discuss responsible use of location tracking and online interactions in outdoor settings.

3. Sample Lesson Plans for Tech-Enhanced Outdoor Education

Augmented Reality Wildlife Exploration - teaches students how to identify local plants and animals using AR-powered apps.

Gamified Nature Trail & QR Code Challenge - students scan QR codes at different stations to unlock environmental puzzles and earn badges.

Citizen Science Field Data Collection - encourages learners to use mobile apps (e.g., iNaturalist, Globe Observer) to record biodiversity data and contribute to research projects.

Example - a lesson plan using QR codes for outdoor learning might include:

Objective: Students will use QR codes to learn about local ecosystems.

Materials Needed: QR codes, mobile devices, and Internet access.

Activity Steps:

Scan QR codes along a nature trail.

Read digital content related to local flora and fauna.

Complete challenges and earn rewards through gamification.

Assessment. Students summarize their findings using a digital field journal.

4. Assessment Tools for Digital Outdoor Learning

Digital Engagement Rubric - evaluates student participation, tech usage, and environmental awareness.



Interactive Quiz Templates - custom quizzes to assess knowledge gained from AR experiences, QR code trails, and mobile app interactions.

Student Reflection and Feedback Forms - allows learners to share their thoughts on digital tools and outdoor learning effectiveness.

Example. An assessment rubric for tech-enhanced outdoor learning might include:

Use of Digital Tools. Did students effectively navigate QR codes, AR content, or GIS mapping?

Engagement Level. How actively did students participate in outdoor activities?

Understanding of Concepts. Did students demonstrate improved environmental awareness and tech literacy?

Empowering Educators with Practical Resources

By utilizing these templates, checklists, lesson plans, and assessment tools, educators can seamlessly integrate technology into outdoor education while ensuring student engagement, safety, and learning effectiveness.

Strategies to Enhance Outdoor Learning Experiences

Successfully integrating technology into outdoor education requires structured strategies that maximize engagement, ensure safety, and support learning objectives. Here are key approaches to enhance outdoor learning experiences:

1. Blending Digital & Environmental Literacy

- Use QR codes, AR, and mobile apps to connect students with real-time environmental data.
- Encourage fact-checking and critical analysis of digital environmental information.

2. Gamification and Storytelling for Outdoor Engagement

- Introduce digital quests, rewards, and interactive storytelling to make learning immersive and fun.
- Use apps like EcoChallenge or Seek by iNaturalist for gamified nature exploration.

3. Safe and Effective Use of Technology Outdoors

- Provide students with a technology safety checklist, ensuring responsible device use.



- Implement battery management strategies for mobile learning in outdoor settings.

4. Teacher Training for Tech-Enhanced Outdoor Learning

- Offer professional development on AR, GIS mapping, and interactive apps for educators.
- Promote cross-disciplinary teaching to integrate science, geography, and digital literacy.

5. Real-World Case Studies and Citizen Science Projects

- Utilize geospatial mapping tools for tracking wildlife migration and climate patterns.
- Engage students in crowdsourced biodiversity projects, using platforms like iNaturalist.

By applying these strategies, educators can create dynamic, interactive outdoor learning experiences that foster exploration, engagement, and sustainability awareness.

REFERENCES

Lin, P.-Y., Wu, W.-C., & Yang, J.-H. (2021). A QR code-based approach to differentiating the display of augmented reality content. *Applied Sciences*, 11(24), 11801. <https://doi.org/10.3390/app112411801>

Yoon, H. (n.d.). QR code data representation for mobile augmented reality. *Perey.com*. . https://www.academia.edu/916498/QR_Code_Data_Representation_for_Mobile_Augmented_Reality

Kan, T.-W., Teng, C.-H., & Chen, M. Y. (2011). QR code-based augmented reality applications. SpringerLink. https://link.springer.com/chapter/10.1007/978-1-4614-0064-6_16

Gul, A., & Bilgin, C. U. (2020). Gamification in adult learning. *APA PsycNet*. <https://psycnet.apa.org/record/2020-25217-022>

Giakalaras, M. (2016). Gamification and storytelling. *ResearchGate*. https://www.researchgate.net/publication/315518111_Gamification_and_Storytelling

Kan, T.-W., Teng, C.-H., & Chen, M. Y. (2011). QR code-based augmented reality applications. SpringerLink. https://link.springer.com/chapter/10.1007/978-1-4614-0064-6_16

Irawati, M. H., Khoirina, S. A., Salim, M. A., Abdillah, R. R., & Hernawati, D. (2024). Correlation between digital literacy and environmental literacy of 11th-grade students. *AIP Conference Proceedings*, 3106(1), 030006. <https://doi.org/10.1063/5.0215781>



- Lo, N. P.-K. (2024). The confluence of digital literacy and eco-consciousness: Harmonizing digital skills with sustainable practices in education. *MDPI Platforms*, 2(1), 15-32. <https://doi.org/10.3390/platforms2010002>
- Allen, C., & Berggren, J. (2016). Digital literacy and sustainability – A field study in EFL teacher development. *Research-Publishing.net*. . <https://doi.org/10.14705/rpnet.2016.eurocall2016.531>
- Giakalaras, M. (2016). Gamification and storytelling. *ResearchGate*. https://www.researchgate.net/publication/315518111_Gamification_and_Storytelling
- Kan, T.-W., Teng, C.-H., & Chen, M. Y. (2011). QR code-based augmented reality applications. *SpringerLink*. https://link.springer.com/chapter/10.1007/978-1-4614-0064-6_16
- Eriksson, M., Kärkkäinen, S., & Tahvanainen, V. (2023). Technology-mediated outdoor learning for primary school student teachers: Focusing on biodiversity. *Journal of Computer Assisted Learning*, 39(6), 1819–1833. <https://doi.org/10.1111/jcal.12841>
- Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher*, 33(8), 3-15. <https://doi.org/10.3102/0013189X033008003>
- Neville, I. A., Petrass, L. A., & Ben, F. (2022). Cross-disciplinary teaching: A pedagogical model to support teachers in the development and implementation of outdoor learning opportunities. *Journal of Outdoor and Environmental Education*, 26, 1–21. <https://doi.org/10.1007/s42322-022-00109-x>



MODULE 8: ILLUSTRATIVE CASE STUDIES DEMONSTRATING SUCCESSFUL IMPLEMENTATIONS

ABSTRACT

This module presents real-life case studies showcasing successful integration of Urban Green Spaces (UGSs) in education. Drawing on experiences from the QRiosity Park project, it illustrates how UGSs—enhanced with tools like augmented reality—can create engaging, multidisciplinary learning environments. The case studies highlight benefits such as improved environmental awareness, student engagement, and well-being, while also addressing implementation challenges. Educators will gain practical insights and inspiration for applying best practices to transform green spaces into innovative, interactive outdoor classrooms tailored to diverse educational settings.

MODULE OBJECTIVES:

- ✓ Understand the educational and environmental value of UGSs
- ✓ Identify how UGSs are perceived in education and urban planning
- ✓ Evaluate the benefits of UGSs in educational contexts
- ✓ Assess challenges in implementing UGSs
- ✓ Apply best practices for UGS integration

INTRODUCTION:

This module explores the integration of Urban Green Spaces (UGSs) into education, highlighting their importance in enhancing environmental literacy and student well-being. In the context of the QRiosity Park project, it examines how UGSs, combined with technology like augmented reality (AR), create interactive, immersive learning experiences. The module supports the handbook's purpose by providing educators with practical insights on how to incorporate UGSs into outdoor education, emphasizing both ecological and educational benefits. Through case studies and best practices, it offers strategies for fostering curiosity, critical thinking, and environmental stewardship in natural, tech-enhanced learning environments.

SECTION 1: REAL-LIFE EXAMPLES FROM PROJECT PARTNER COUNTRIES

Urban Green Spaces (UGSs) refer to publicly accessible natural or semi-natural areas located within urban environments, such as parks, gardens, tree-lined streets, riverbanks, and green rooftops. These spaces play an increasingly important role in education, serving as tools for experiential learning, promoting student well-being, and fostering environmental awareness and citizenship. Within educational settings, UGSs offer unique opportunities for hands-on learning and the development of a deeper understanding of sustainability and ecological systems. In the context of France, the integration of UGSs into educational practices reflects a broader national commitment to sustainable urban development and environmental education.

The French government has taken deliberate steps to embed ecological and social concerns into public policy, including the realm of education. Since its establishment in 2008, the General Commission for Sustainable Development (CGDD) has played a central role in coordinating these efforts. It produces reports and indicators on issues such as biodiversity, climate change, energy use, waste management, and urban planning. These resources provide critical data for informed decision-making and support the alignment of educational goals with broader sustainability targets. Additionally, the French Agency for Ecological Transition (ADEME) offers comprehensive educational materials covering key environmental themes, including biodiversity preservation, climate change mitigation, and energy efficiency. These tools help educators integrate UGS-based learning into both formal and informal curricula.

Across the country, UGSs are increasingly utilized within schools and other educational institutions in varied and innovative ways. Many primary and secondary schools have established gardens that serve as living laboratories, allowing students to engage directly with plant biology, nutrition, and ecological systems. These experiences not only reinforce scientific knowledge but also encourage environmental stewardship and personal responsibility. UGSs are also frequently used as outdoor classrooms, where the natural environment becomes a dynamic and interactive setting for learning. Teachers use parks, rooftop gardens, and even roadside greenery to teach a wide range of subjects, from geography and natural sciences to art and civic education. Moreover, these spaces contribute significantly to students' physical and social development. They provide areas for physical education, sports, and recreational activities, enhancing motor skills, encouraging teamwork, and promoting a healthy lifestyle.

Two illustrative examples of effective UGS integration at the local level can be found in the cities of Paris and Metz. In Paris, the OASIS (Openness, Adaptation, Sensibilisation, Innovation, and Sociality) Schoolyard Program represents a flagship initiative aimed at transforming traditional asphalt schoolyards into green, climate-resilient spaces. Launched in 2018, the program

addresses the urban heat island effect while promoting environmental education and community engagement. The transformation of these spaces involves the active participation of students, educators, and local residents, fostering a sense of ownership and collaboration. Since its inception, the OASIS program has expanded from ten pilot schoolyards to over seventy-five transformed spaces, with continued plans for further expansion. These redesigned schoolyards feature shaded areas, drought-resistant vegetation, and permeable surfaces that enhance local microclimates and provide new possibilities for outdoor learning.

In contrast, the city of Metz offers a long-standing example of urban ecological integration. Since the 1970s, Metz has adopted policies that incorporate green space development into broader urban planning. This approach includes the creation of green corridors along rivers and the development of pedestrian-friendly zones. These spaces not only improve the quality of urban life but also serve as accessible educational resources for local schools. Teachers and students utilize these natural areas for environmental awareness activities and field-based learning, making the city itself a living classroom.

Despite these successes, several challenges remain. One significant issue is the unequal access to green spaces between urban and rural or under-resourced areas. While larger cities may have the means to implement programs like OASIS, smaller communities may lack the financial or spatial resources to create similar environments. Additionally, while many UGS-related activities are supported at the school level, environmental education is not yet fully embedded in standardized curricula across all educational levels. Teacher training represents another area requiring attention; not all educators are equipped with the pedagogical skills necessary to effectively utilize outdoor learning environments.

Looking to the future, it is clear that further integration of UGSs into the education system requires a multifaceted approach. National educational authorities should consider formally incorporating outdoor and sustainability-based learning into curricula to ensure consistency and quality across schools. Investing in professional development for teachers, particularly in outdoor pedagogy and place-based learning, will be essential for maximizing the benefits of UGSs. Moreover, targeted funding and equity initiatives are needed to support schools in disadvantaged areas, ensuring that all students, regardless of their socio-economic background, have access to green learning environments. Establishing robust mechanisms to monitor and evaluate the educational and environmental impacts of UGSs will also be important for informing future policy decisions and improving program effectiveness.

In conclusion, the integration of Urban Green Spaces into education in France demonstrates a growing recognition of the vital role that nature plays in fostering learning, well-being, and



ecological awareness. Through national policy support and innovative local initiatives such as those in Paris and Metz, UGSs are becoming an essential part of the educational landscape. Continued efforts to address challenges related to equity, curriculum integration, and teacher training will be necessary to fully realize the potential of UGSs as transformative educational tools.

SECTION 2: IMPLEMENTATION JOURNEY: OBJECTIVES, STEPS, OUTCOMES, CHALLENGES

The implementation journey of integrating Urban Green Spaces (UGSs) into educational practices in France illustrates a dynamic intersection between environmental policy, educational innovation, and urban planning. Driven by national and local initiatives, the primary objective of this process is to embed ecological consciousness and sustainability principles into everyday learning environments. This approach aims to cultivate environmental stewardship, enhance student engagement through experiential learning, mitigate urban environmental issues such as the heat island effect, and improve student well-being through the presence of nature in educational spaces.

At the national level, the implementation began with the development of strategic policy frameworks. Governmental agencies such as the General Commission for Sustainable Development (CGDD) and the French Ministry of Education have collaborated to introduce educational roadmaps that incorporate sustainability objectives, with a strong emphasis on the ecological transition. These frameworks laid the groundwork for schools and local authorities to initiate pilot programs that explore the potential of UGSs in educational contexts. One of the most notable examples is the OASIS Schoolyard Program in Paris, launched in 2018. It aimed to address the issue of heat islands in dense urban areas by transforming traditional asphalted schoolyards into vegetated, climate-resilient spaces. These areas were not only designed for climate adaptation but also for educational and recreational purposes, reflecting a multifunctional use of school environments.

The implementation process has involved several key steps. Initially, pilot schools were selected to test the feasibility and benefits of converting schoolyards into green spaces. This was followed by participatory design processes, where students, teachers, parents, and local communities contributed to the planning and layout of the spaces. This inclusive methodology ensured that the final designs were tailored to the needs of users while fostering a sense of ownership and engagement. Once the designs were finalized, construction and landscaping took place, incorporating features such as permeable surfaces, shade trees, drought-resistant plants, and

biodiversity-enhancing elements. Subsequently, these spaces were integrated into pedagogical practices, enabling educators to conduct lessons outdoors and use the natural environment as a living classroom.

The outcomes of these initiatives have been multifaceted. On an educational level, students demonstrate increased motivation, attentiveness, and curiosity when learning in outdoor settings. Teachers have reported enhanced student participation and a deeper understanding of ecological systems through hands-on activities such as gardening, biodiversity observation, and environmental monitoring. From a health and well-being perspective, green schoolyards provide restorative environments that help reduce stress, improve concentration, and support social interaction. The presence of UGSs contributes to physical activity, enhances motor skill development, and encourages cooperative play, all of which are critical for children's holistic development. Moreover, the transformed spaces serve as community assets, offering green recreational zones accessible outside school hours, thereby strengthening local cohesion and fostering shared environmental responsibility.

The broader environmental impact is also significant. The reduction of asphalt surfaces and the introduction of vegetation help regulate local temperatures, manage stormwater runoff, and improve air quality. These ecological benefits align with national goals for urban climate resilience and sustainable development, making the schoolyard transformation a strategic component of France's environmental agenda.

Despite these achievements, several challenges continue to hinder the full realization of UGS integration across the educational landscape. One major issue is the disparity in access to resources among schools. While urban centers such as Paris and Metz have demonstrated successful models, schools in less affluent or rural areas often lack the financial means, technical support, or political backing to implement similar initiatives. This raises concerns about equity and the potential for a growing environmental education gap between different regions. Another challenge is the limited formal integration of UGS-based learning into standardized national curricula. Although many teachers incorporate outdoor learning into their practice, these efforts often remain informal and reliant on individual initiative. Without systemic curricular reforms and guidelines, the long-term sustainability and educational impact of UGSs remain uncertain.

In addition, teacher training poses a significant barrier. Many educators are not sufficiently prepared to use outdoor spaces effectively or to align their teaching with sustainability objectives. Professional development opportunities in outdoor pedagogy, environmental education, and interdisciplinary learning remain limited, which can restrict the pedagogical value of green spaces. Furthermore, maintenance and long-term management of green infrastructure

present logistical challenges. Green schoolyards require ongoing care, including watering, weeding, and general upkeep. Schools often lack the personnel or budget to ensure the sustainability of these spaces, risking degradation over time. Seasonal weather variations also limit the usability of outdoor spaces, particularly during colder months or periods of heavy rainfall, underscoring the need for flexible design and infrastructure solutions such as covered areas or modular furniture.

In conclusion, the journey toward integrating Urban Green Spaces into the French educational system has demonstrated significant promise in enhancing pedagogical practices, promoting sustainability, and improving student well-being. Initiatives like the OASIS Schoolyard Program exemplify how targeted policy support, community involvement, and innovative design can transform traditional educational spaces into vibrant, multifunctional environments. However, addressing existing challenges—particularly in terms of equity, curricular integration, teacher training, and infrastructure maintenance—will be essential to ensure that these benefits are accessible to all students across France. Sustained investment, institutional support, and ongoing research will be critical to scaling these practices and embedding them as a permanent feature of France’s educational and environmental strategy

SECTION 3: INTERVIEWS OR TESTIMONIALS FROM EDUCATORS, STUDENTS, OR PARTNERS

The incorporation of Urban Green Spaces (UGSs) into educational settings is increasingly recognized as a powerful method to foster experiential learning, environmental awareness, and community engagement. A recent focus group involving three education professionals who had not yet implemented UGSs in their work yielded valuable insights into both the potential and the challenges of adopting this approach. While their experiences with UGSs were limited, their reflections provided a rich foundation for understanding the dynamics of educational transformation in urban and peri-urban environments.

Participants unanimously acknowledged the pedagogical and ecological value of Urban Green Spaces. They described UGSs as important not only for preserving biodiversity in increasingly urbanized landscapes but also for stimulating student creativity and nurturing stronger community ties. One participant noted, “Even though we don’t yet use UGSs in our programs, I can imagine the immense potential—especially in urban areas where children often lack direct contact with nature.” Another added, “There’s something about learning outside, in a real-world setting, that sparks curiosity and brings lessons to life.” These reflections align with broader educational theories emphasizing the benefits of nature-based learning in improving cognitive and emotional development (Louv, 2005; Rickinson et al., 2004).

Despite the recognized benefits, participants identified several barriers limiting the widespread adoption of UGSs in schools and educational institutions. One of the primary constraints mentioned was regional disparity. In some urban centers, well-maintained and accessible green spaces are plentiful, while in rural or economically disadvantaged areas, such spaces are either underdeveloped or entirely absent. Additionally, limited public funding and bureaucratic constraints were repeatedly cited as major obstacles. “We often want to innovate,” one participant explained, “but without financial resources and supportive policies, it’s difficult to take that first step.”

Beyond infrastructure and funding issues, participants discussed cultural and institutional challenges. Traditional teaching practices and rigid curricula often favor indoor, textbook-based learning, leaving little room for outdoor experiential methods. Educators frequently face pressure to meet standardized testing requirements, which can marginalize creative or interdisciplinary approaches like UGS-based learning. Furthermore, a lack of awareness among school administrators and policymakers about the pedagogical benefits of UGSs contributes to their underutilization.

Technology emerged during the discussion as both a barrier and an enabler. While excessive screen time and digital distractions can reduce children's engagement with natural environments, participants emphasized that technology, when used strategically, can enhance outdoor learning experiences. For example, applications like iNaturalist allow students to identify plants and animals using image recognition, collect data on local biodiversity, and contribute to citizen science initiatives. Gamified platforms and augmented reality (AR) tools were also identified as promising ways to bridge the gap between digital learning and real-world engagement. One participant shared, “If we integrate tech in smart ways, we can actually make outdoor education more interactive and relevant to digital-native students.”

Participants highlighted several prerequisites for the successful implementation of UGSs in education. These included comprehensive teacher training in outdoor pedagogy, cross-sector collaboration among educators, urban planners, and local policymakers, and the availability of safe, well-maintained green spaces equipped with basic facilities like seating, shade, and restrooms. “Teachers need to feel confident and equipped to teach outdoors,” one respondent emphasized. “This isn’t something we’re trained for in most teacher preparation programs.” This observation underscores the importance of targeted professional development and capacity building for educators.

Despite the challenges, the potential of UGSs to transform education was a recurrent theme. Participants agreed that these spaces can significantly enhance students’ environmental literacy,

critical thinking, and understanding of sustainability. When integrated effectively, UGSs foster interdisciplinary learning, allowing for the convergence of subjects such as science, geography, art, and civic education. Project-based learning emerged as a best practice, enabling students to engage in real-world environmental challenges, from planting trees to measuring soil health or mapping urban biodiversity. Community-driven projects were also praised for reinforcing civic engagement and collaboration skills.

Partnerships were viewed as critical to the success of UGS initiatives. Collaborating with NGOs, local governments, universities, and environmental professionals was seen as a way to bring in additional expertise, financial resources, and innovative tools. One participant suggested that “building networks between schools and green space experts could really help scale these efforts.” Such collaborations are already visible in some regions of France, where municipalities and environmental organizations work jointly to support school garden programs and outdoor ecological workshops.

In terms of future directions, the focus group participants recommended several strategic actions. Increasing public and private funding for UGS development, embedding environmental education into national and local policy frameworks, and offering continuing professional development opportunities for educators were deemed essential. Integrating UGSs into STEM curricula and promoting interdisciplinary projects that connect students with local ecological issues can further enhance educational outcomes. Moreover, the incorporation of immersive technologies such as AR and VR was seen as a way to make UGS-based education more engaging and accessible, particularly for students with limited mobility or those in densely urbanized areas.

Ultimately, the testimonials collected during the focus group illustrate a growing enthusiasm for the transformative role of Urban Green Spaces in education. While significant barriers remain, especially related to policy, funding, and infrastructure, the consensus among participants was clear: UGSs hold the potential to revolutionize how and where learning takes place. By fostering stronger connections between students and their environments, these spaces can cultivate a generation of environmentally literate, socially engaged citizens ready to address the pressing sustainability challenges of the 21st century.

SECTION 4: TRANSFERABLE INSIGHTS AND RECOMMENDATIONS FOR SCALING

The experiences gathered through the implementation of Urban Green Spaces (UGSs) in education, particularly within the QRiosity Park project and the French case studies, offer a



number of important lessons and best practices that can be adapted and transferred to other educational and urban contexts.

1. Start Small, Scale Smart

Successful implementation often begins with pilot initiatives, as demonstrated by the OASIS Schoolyard Program. Starting with a limited number of test sites allows for the testing of ideas, collection of evidence, and refinement of processes before scaling up. This phased approach reduces risk and helps build stakeholder confidence.

2. Embrace Participatory Design

Involving students, educators, families, and community members in the design and planning of green spaces not only fosters a sense of ownership but also ensures that the resulting environments are relevant, functional, and engaging. This participatory model enhances community cohesion and promotes active citizenship.

3. Integrate UGSs into Curricula Strategically

Rather than treating outdoor learning as an extracurricular activity, successful projects weave UGSs into existing subjects and learning outcomes. For example, biology, geography, art, and environmental science can all benefit from UGS-based instruction. Interdisciplinary planning is crucial for this integration.

4. Use Technology as a Bridge, Not a Barrier

Digital tools such as augmented reality (AR), geolocation apps, and biodiversity monitoring platforms can greatly enrich the learning experience. When aligned with pedagogical goals, these technologies help connect students to nature while appealing to their digital literacy.

5. Invest in Teacher Training

Teacher preparedness is a recurring theme across all successful initiatives. Training educators in outdoor pedagogy, risk management, interdisciplinary teaching, and sustainability ensures that they can confidently and creatively use UGSs as dynamic learning spaces.

6. Consider Environmental and Social Equity

Equitable access to green spaces must be a priority. Policymakers and school leaders should ensure that resource-limited communities are not left behind. This includes allocating funding, offering technical support, and fostering partnerships with local organizations and municipalities.

7. Plan for Maintenance and Sustainability

Long-term success depends on establishing clear responsibilities for the maintenance of green infrastructure. Whether through school staff, student groups, parent associations, or local government, ongoing care is vital to preserving both the educational and ecological value of the space.

In summary, these lessons emphasize the importance of holistic planning, inclusive participation, and system-wide support. UGSs can be powerful tools for experiential education and sustainable development—if approached thoughtfully and inclusively.

SECTION 5: TIPS FOR ADAPTING PRACTICES TO VARIOUS SCHOOL CONTEXTS

To successfully incorporate Urban Green Spaces (UGSs) into educational practice, educators and policymakers must adopt coordinated and forward-thinking strategies. The following recommendations are drawn from real-life implementation experiences and are intended to support effective, sustainable integration of UGSs in various educational contexts.

For Educators:

- ✓ **Plan with Purpose:** Design learning activities that are directly tied to curricular goals. UGSs should be used not only for free play or occasional lessons but as regular and structured learning environments.
- ✓ **Foster Cross-Disciplinary Collaboration:** Work with colleagues across different subjects to develop interdisciplinary lessons that utilize UGSs. Outdoor education is particularly effective when combining science, art, literature, and civic education.
- ✓ **Engage Students in Stewardship:** Involve students in maintaining the green space. Gardening, waste management, biodiversity tracking, and seasonal observations promote responsibility and deepen learning.
- ✓ **Use Technology Wisely:** Employ AR, mobile apps, or digital journals to enhance exploration and documentation. Technology should support—not replace—the sensory and social experiences of outdoor learning.
- ✓ **Adapt to Local Contexts:** Tailor your use of UGSs to local resources, climate conditions, and community interests. Flexibility and creativity are key when working in varied environments.

For Policymakers and School Administrators:

- ✓ **Embed UGSs in Policy Frameworks:** Recognize UGSs as essential components of educational infrastructure. Include them in sustainability plans, building codes, and school renovation guidelines.
- ✓ **Provide Funding and Incentives:** Offer grants, technical assistance, or tax incentives to schools and municipalities that develop and maintain green spaces for educational use.
- ✓ **Support Professional Development:** Establish formal training programs in outdoor and sustainability education. Teacher training institutions should integrate outdoor pedagogy into their curricula.
- ✓ **Monitor and Evaluate Impact:** Develop tools and indicators to assess the educational, social, and environmental outcomes of UGS-based learning. Use this data to inform ongoing improvement and policy decisions.
- ✓ **Promote Equity and Accessibility:** Ensure that all schools—especially those in underserved communities—have access to safe and usable green spaces. Equity should be a foundational principle in program design and implementation.

By embracing these recommendations, stakeholders can transform urban green spaces from passive environmental features into active educational assets. In doing so, they can foster more resilient, inclusive, and inspiring learning environments for future generations.

REFERENCES

Aboulmaga, M., Trombadore, A., Mostafa, M., & Abouaiana, A. (2024). Urban Green Coverage and Its Role in Post-COVID-19 Regulations and Recommendations. In *Livable Cities: Urban Heat Islands Mitigation for Climate Change Adaptation Through Urban Greening* (pp. 685-746). Cham: Springer International Publishing.

Derr, V. (2018). Urban green spaces as participatory learning laboratories. *Proceedings of the institution of civil engineers-urban design and planning*, 171(1), 25-33.

Kumar, A., Ekka, P., Upreti, M., Shilky, & Saikia, P. (2023). Urban green spaces for environmental sustainability and climate resilience. In *The Palgrave Handbook of Socio-ecological Resilience in the Face of Climate Change: Contexts from a Developing Country* (pp. 389-409). Singapore: Springer Nature Singapore.

Montalvan Castilla, J. E., Korkou, M., Sageidet, B. M., & Mawira Tarigan, A. K. (2024). Urban green spaces in early childhood education and care: insights from teachers in Stavanger, Norway. *European Early Childhood Education Research Journal*, 1-18.

CONCLUSION

SUMMARY OF KEY TAKEAWAYS FROM THE HANDBOOK

The QRiosity Park Handbook for Educators has provided a comprehensive roadmap for transforming Urban Green Spaces (UGSs) into vibrant outdoor learning environments. Across its eight modules, it has demonstrated that UGSs are not just passive public areas but powerful educational platforms capable of enhancing cognitive development, emotional well-being, environmental awareness, and social engagement.

Key lessons include:

- UGSs are versatile tools that support interdisciplinary learning, from science and geography to arts and citizenship education.
- Infrastructure, training, policy, and collaboration are critical prerequisites for effective UGS utilization.
- Barriers such as institutional inertia, logistical constraints, and funding issues can be overcome through strategic planning and stakeholder involvement.
- Best practices from across Europe reveal how schools, NGOs, and municipalities can successfully integrate green spaces into formal and non-formal education.
- Practical tools and guidelines empower teachers to confidently plan, deliver, and evaluate outdoor lessons.
- Technology, including QR codes, mobile apps, and augmented reality, can enhance the outdoor learning experience while promoting digital literacy.
- Real-life case studies illustrate the tangible impact of outdoor education on student engagement, environmental stewardship, and community involvement.

Together, these components form a robust framework for educators ready to embrace the outdoors as a space of exploration, inquiry, and transformation.

REFLECTIONS ON THE ROLE OF EDUCATORS AS CHANGE AGENTS IN SUSTAINABILITY EDUCATION

Educators are at the heart of this transformation. By stepping beyond the traditional classroom, teachers become facilitators of experiential learning and stewards of sustainable development.



Their role is not only to impart knowledge but to inspire a sense of curiosity, responsibility, and agency in their students.

In the context of UGS-based learning, educators are:

- ✓ Role models of environmental awareness, demonstrating how to interact meaningfully with the natural world.
- ✓ Community connectors, building bridges between schools, families, municipalities, and local NGOs.
- ✓ Innovators, reimagining pedagogical approaches to fit the needs of a changing planet and society.

The success of QRiosity Park reinforces the idea that when educators are equipped, motivated, and supported, they become powerful change agents—capable of cultivating future generations who value sustainability, equity, and resilience.

FINAL THOUGHTS ON PROMOTING LONG-TERM INTEGRATION OF UGSS IN LEARNING

The integration of UGSs into education should not be viewed as a one-time project or extracurricular activity—it should be embedded into the core mission of schools. To ensure long-term impact, outdoor learning must be:

- Embedded into curricula through adaptable lesson plans and clear links to national standards.
- Supported by institutional policies, funding mechanisms, and infrastructure investments.
- Celebrated through school culture, leadership engagement, and community visibility.
- Sustained through continuous professional development, teacher networks, and shared resources.

As climate, mental health, and educational challenges become more complex, UGSs offer a timely and accessible response—connecting learning with life.

NEXT STEPS FOR SCHOOLS AND POLICYMAKERS INSPIRED BY THE QRIOSITY PARK PROJECT

The QRiosity Park project invites schools, municipalities, and policymakers to take the following actionable steps:



For Schools and Educators:

- Conduct an audit of nearby UGSs and explore their educational potential.
- Pilot one outdoor lesson per month using the handbook's guidelines.
- Form a green education team of teachers, students, and parents.
- Collaborate with local NGOs or urban planners to co-design learning spaces.

For Policymakers and Educational Authorities:

- Integrate UGS-based learning into national education strategies.
- Offer incentives and funding for schools investing in outdoor infrastructure and training.
- Facilitate partnerships between schools and municipalities for green space access and improvement.
- Recognize and showcase exemplary schools that lead in sustainability education.

By integrating outdoor education with innovative digital tools like QR codes and mobile apps, we open new possibilities for meaningful, engaging, and sustainable learning. This is a call to action for schools, educators, and learners to embrace interactive, nature-based experiences that strengthen environmental awareness, digital literacy, and real-world connections. Let's take learning beyond the classroom—and into the world around us.