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UNESCO sites as partners for Education for Sustainable Development

An implementation guide

Education 2030

UNESCO – a global leader in education

Education is UNESCO's top priority because it is a basic human right and the foundation for peace and sustainable development. UNESCO is the United Nations' specialized agency for education, providing global and regional leadership to drive progress, strengthening the resilience and capacity of national systems to serve all learners. UNESCO also leads efforts to respond to contemporary global challenges through transformative learning, with special focus on gender equality and Africa across all actions.

The Global Education 2030 Agenda

UNESCO, as the United Nations' specialized agency for education, is entrusted to lead and coordinate the Education 2030 Agenda, which is part of a global movement to eradicate poverty through 17 Sustainable Development Goals by 2030. Education, essential to achieve all of these goals, has its own dedicated Goal 4, which aims to ***"ensure inclusive and equitable quality education and promote lifelong learning opportunities for all."*** The Education 2030 Framework for Action provides guidance for the implementation of this ambitious goal and commitments.

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Education 2030

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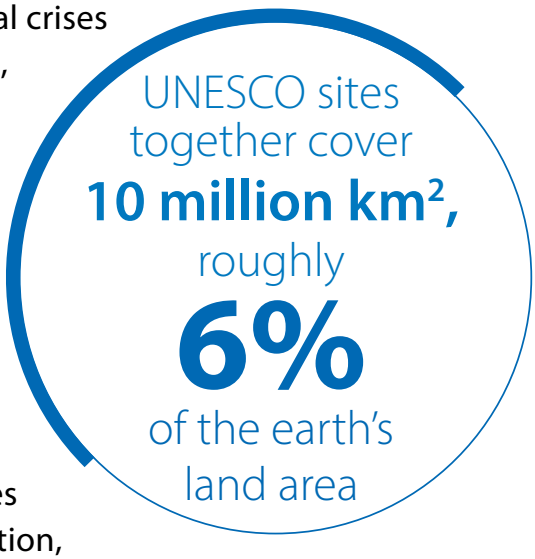
S H O R T S U M M A R Y

How UNESCO sites are bridging nature and humanity for a sustainable future

UNESCO's unique global network of designated sites are important models for building resilience to climate change and reconciling people and nature. The network includes 759 biosphere reserves, 213 Global Geoparks, 1,223 World Heritage sites, 51 ecohydrology demonstration sites, and 113 Water Museums across many countries. These sites are important for addressing the major global crises of climate change, pollution, and biodiversity loss, which threaten current and future generations. To tackle these issues, it is essential to educate people with the knowledge and skills needed to make responsible decisions for a sustainable future.



UNESCO sites play a vital role in biodiversity and climate change education, offering hands-on learning experiences that help develop climate and ocean literacy, as well as environmental values and skills. These sites provide resources for education, research, and innovative environmental practices, helping to deepen the relationship humans have with their natural environment.

By integrating the education for sustainable development approach into the UNESCO sites, learners, educators, and entire communities can contribute positively to protecting biodiversity and cultural heritage, take responsibility for their environment, and learn from each other across generations. The examples presented in this guide highlight the incredible potential of these initiatives.

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"Since wars begin in the minds of men and women, it is in the minds of men and women that the defences of peace must be constructed"

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About this publication

Why this guide?

This guide aims to provide practical suggestions and ideas for teachers and educators on how to mobilize and collaborate with UNESCO designated sites (biosphere reserves, World Heritage sites and Global Geoparks), Ecohydrology Demonstration Sites and members of the Global Network of Water Museums, to develop practical learning activities. The overall approach is to promote climate and environmental actions, based on on-going projects at UNESCO sites around the world, and to let learners experience the reality of sustainable development in their local contexts through these sites and museums.

The guide is aligned with UNESCO's work in Education for Sustainable Development (ESD) and its work on greening education through the Greening Education Partnership. It directly responds to youth demand for quality climate change education and more experiential action-oriented learning using whole-community approaches, so that the vision of all learners can be widened, connected to local conditions and real-world challenges, and so that links with people and sites at the frontlines of nature conservation, climate change, green economy and community development can be developed. It brings together elements of practical advice in terms of learning approaches and objectives, suggestions of activities, and ideas of climate and environmental actions, gathered from on-going educational activities and experiences in UNESCO sites in different parts of the world, to ensure the guide is directly relevant to different contexts and across the different types of UNESCO sites.

Who is this guide for?

This guide is aimed at educators, students and other stakeholders who work, study, teach, develop initiatives, provide educational activities, visit or are interested in UNESCO sites and water museums. It aims to provide guidance and suggestions that stakeholders can select and adapt to fit concrete learning contexts and UNESCO sites.

In addition, this guide can also benefit community members, decision-makers, NGOs, researchers, private sector partners, media professionals, youth groups, and volunteer organizations.

Readers are invited to refer to the ESD for 2030 Roadmap for Implementation, the Greening Curriculum Guidance: teaching and learning for climate action (notably the section on *Key Concept 2 - Ecosystems and biodiversity*) and the Green School Quality Standard: greening every learning environment (notably *Chapter 2 and the sections on Facilities and Operations, Teaching and Learning, and Community engagement*) for additional inspirations.

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Contents

I. Introduction

> We only have one planet. Not one for nature and another for human beings. The pandemic showed us our interdependence with the living world. Biodiversity, the climate crisis and well-being are all interconnected.
>
> Audrey Azoulay, UNESCO Director-General

The triple planetary crises of climate change, pollution, and biodiversity loss threaten the well-being of current and future generations. In response to the climate crisis and other sustainability challenges, there is an urgent need to empower learners with knowledge, skills, values and attitudes to take informed decisions and responsible actions for environmental integrity, economic viability and a just society for present and future generations.

Education for Sustainable Development (ESD) is UNESCO's response to these urgent challenges and the key to unlocking progress in all of the Sustainable Development Goals. It teaches individuals to make informed decisions and take action, both individually and collectively, to change society and protect the planet. UNESCO's ESD for 2030 programme produces and shares knowledge, offers policy guidance and technical support to countries, and implements projects on the ground. It fosters peer learning and innovation through information, networks and partnerships. Within this framework, UNESCO hosts the Greening Education Partnership which aims to strengthen countries' capacity to provide quality climate change education.

UNESCO's networks of designated sites include 759 biosphere reserves in 136 countries, 1,223 UNESCO World Heritage sites in 168 countries including 231 UNESCO World Heritage natural sites in 105 countries, 213 UNESCO Global Geoparks in 48 countries, 51 Ecohydrology Demonstration Sites in 32 countries and 113 Water Museums in 40 countries. UNESCO sites are at the frontlines of biodiversity and climate change impacts and can provide contextualized and action-based learning opportunities to develop climate-, ocean- and eco-literacy, values and skills for action in real-life situations. They are key areas where people learn to live sustainably and in harmony with other species and experiences are shared for the benefit of all.

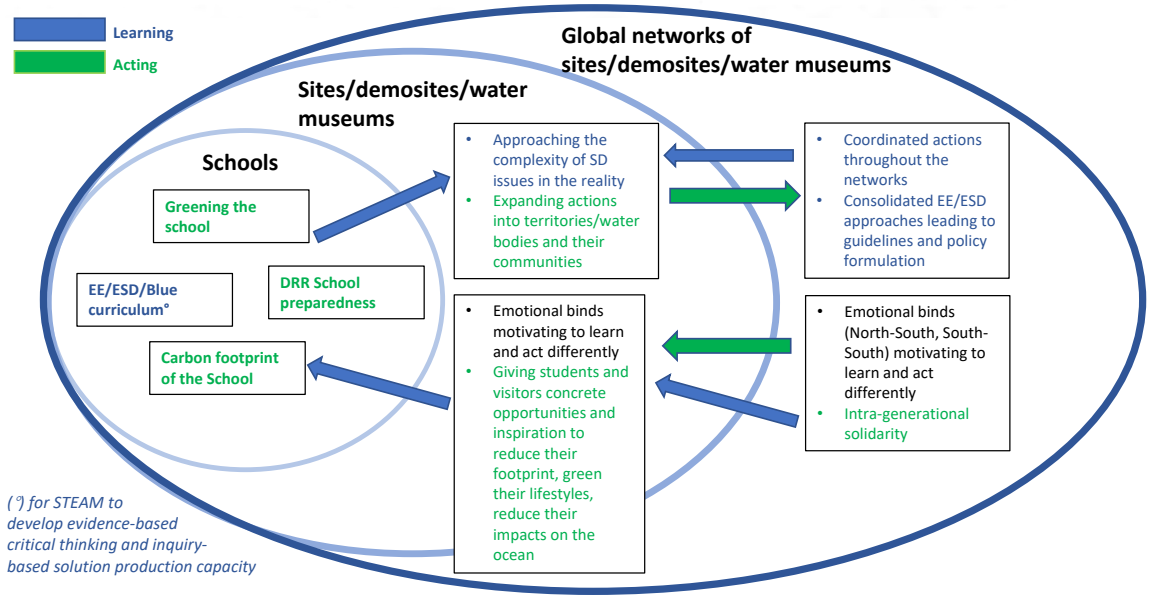
These sites provide valuable resources for opportunities for Education for Sustainable Development (ESD) in terms of learning, research, capacity-building, decision-making and innovative environmental education (EE), thereby reconciling humans and nature for the implementation of more sustainable and resilient development pathways.

UNESCO's Intersectoral Programme on using UNESCO sites as ESD learning hubs for sustainability seeks to promote an integrated, interdisciplinary approach to advancing scientific and environmental education as part of inclusive quality education and lifelong learning for all. Based on the holistic learning approach of ESD, activities developed in this context aim to address key environmental and sustainability issues in teaching and learning while developing critical competencies such as system-thinking, problem-solving and collaboration so all learners can understand the complex nature of climate change and its linkages with biodiversity loss, food security, ocean health, gender equity, living heritage, water, energy and sustainable lifestyles.

II. Education for Sustainable Development: A transformative approach to embrace UNESCO sites as learning hubs for sustainability

The use of UNESCO sites as living learning hubs aims at developing novel approaches to EE and ESD engaging not only educators and learners but also key actors for conservation and community development. ESD is recognized as a key enabler of all 17 SDGs and achieves its purpose by transforming society. Learning can be linked to the Sustainable Development Goals (SDGs), notably for SDG 6, SDG 13, SDG 14 and SDG 15.

Environmental Learning and Action: from local to global, and vice-versa...



Such expanded engagement beyond the formal education systems and multi-stakeholder collaboration, involving youth networks and local communities, addresses and contributes to several global initiatives and processes:

- SDG Target 4.7 to ensure all learners acquire knowledge and skills needed to promote sustainable development
- UNESCO Recommendation on Education for Peace, Human Rights and Sustainable Development which contains several paragraphs related to nature and the outdoors, notably paras 6(a), 8(n), 39 and 41(e)
- Education for Sustainable Development (ESD) for 2030 framework and roadmap
- Greening Education Partnership pillars on greening schools, curriculum, and communities
- Ocean Decade Challenge 10 (*Change Humanity's relationship with the ocean*) of the UN Decade of Ocean Sciences
- Education Challenge 6.1 of the UN Decade on Ecosystems Restoration
- Greening School Grounds & Outdoor Learning Global Action Agenda
- Target 1, Target 12, Target 16 and Target 21 of the Kunming-Montreal Global Biodiversity Framework, including Section K. *Communication, education, awareness and uptake*
- Article 6 of the UN Framework Convention on Climate Change, Article 12 of the Paris Agreement and the associated Action for Climate Empowerment (ACE) agenda

Why ESD?

Education for sustainable development is an integral element of SDG target 4.7. ESD empowers learners of all ages with the knowledge, skills, values and agency to take informed decisions and make responsible actions for environmental integrity, economic viability and a just society empowering people of all genders, for present and future generations, while respecting cultural diversity.

ESD is a lifelong learning process and an integral part of quality education. It enhances the cognitive, socio-emotional and behavioural dimensions of learning. It is holistic and transformational and encompasses learning content and outcomes, pedagogy and the learning environment itself. It empowers learners of all ages to address interconnected global challenges including climate change, loss of biodiversity, unsustainable use of resources, and inequality.

ESD plays a crucial role in tackling the triple planetary crisis of climate change, biodiversity loss and pollution, which includes the interconnected environmental, social, cultural and economic crises the world is facing today. It helps build and foster resilience in communities by equipping them with the knowledge and skills needed to adapt to environmental changes, mitigate climate-related risks, and recover from disasters. It builds on indigenous knowledge and practices. It enhances collaboration across different sectors to address environmental, social, and economic challenges through coordinated efforts and their capacity to withstand the impacts of the triple planetary crisis.

Here are some of the ways ESD can contribute to addressing the triple planetary crisis:

- **Raising awareness and enhancing knowledge (actionable knowledge) about the world around us:** ESD educates and raises awareness about the environmental, social, and economic challenges that we face and provides an understanding of how they are linked. Thus, it creates awareness towards developing environmental-friendly and sustainable behaviours day to day alongside economic and social concerns.
- **Empowering people:** ESD empowers people to take action towards achieving the 17 SDGs, engages practitioners, civil society, decision-makers and academics, and addresses a host of social, ecological, and economic sustainability concerns.
- **Promoting interdisciplinary and multidisciplinary approaches:** ESD promotes interdisciplinary and intercultural competencies as it addresses challenges to local or planetary sustainability. Interdisciplinary thinking, in which concepts and knowledge from different academic traditions are used to analyze situations or solve problems, allows people to use knowledge in new and creative ways.
- **Embedding sustainable practices:** ESD enables the development of a culture of lifelong learning towards sustainable practices at all levels, from individual to organizational levels, by emphasizing sustainable economic growth, responsible consumption, and climate action.
- **Encouraging advocacy:** ESD encourages environmental advocacy, promotes civic engagement, and supports building positive mindsets, especially among young people and future leaders. ESD can inspire individuals to become environmental advocates and leaders, fostering active citizenship as a means of social environmental responsibility.
- **Promoting innovation:** ESD promotes innovation in technology, science, and engineering with an intention to create a more sustainable and equitable world. This encourages the development of innovative solutions for sustainable transport, energy, and agriculture systems among others.
- **Promoting ethical practices:** ESD educates individuals and societies about the moral and ethical importance of biodiversity, environmental protection, and sustainability, allowing more in-depth understanding of intercultural and ethical behaviours toward making responsible decisions.

ESD effectively provides people with the necessary knowledge and skillset to take action towards tackling climate change. Through innovative and practical learning, young people and communities can be successfully equipped to create a climate-resilient and sustainable future.

Why UNESCO sites?

UNESCO has developed an important number of learning activities with and within UNESCO sites. UNESCO Chairs in ESD, sustainability science and related-thematic areas, UNESCO Associated Schools and UNESCO networks of cities are also mobilized to support this 'whole of community' approach in environmental action and climate change education.

Based on experience, UNESCO sites are considered excellent entry points for connecting all stakeholders to engage, experiment, exchange and celebrate together in the local context. Even for those who do not have access to a UNESCO site, many sites have virtual tours and could be a part of studies during class time, as part of homework assignments, or as research sites.

Specifically, these sites offer unique opportunities for learners for:

- **Better understanding of sustainability issues, the role of education** in addressing serious climate and environmental concerns and the importance of UNESCO sites.
- **Developing skills**: Through direct engagement with the natural environment, learners benefit from enhanced knowledge of both local and global perspectives, improved social and communication skills, and the development of multi-ethnic intercultural relationships.
- **Interdisciplinary learning**: Learners benefit from an interdisciplinary learning experience, understanding the interconnectedness of various fields. They are better equipped to address global environmental challenges and to make informed decisions and take individual and collective action to care for the planet by developing critical thinking on these issues.
- **Application of theoretical knowledge**: Learners not only acquire theoretical knowledge but also gain practical skills. They learn what they live and live what they learn.
- **Discovery of related professions**: Through these immersive experiences, learners will discover certain jobs and professions, and, in some cases, this may lead to choosing a career in sustainable development and environmental protection.
- **Strengthening connections with nature**: By interacting directly with their environment, learners will have the opportunity to witness and appreciate rich biodiversity, experiencing a more profound connection with nature. Being physically present at these sites creates an emotional connection which contributes to fostering a sense of respect and responsibility towards the environment.
- **Sense of belonging**: Learners learn more about their local surroundings, natural heritage and cultural heritage and develop a sense of belonging by the integration of cultural and environmental learning.
- **Strong commitment and active participation**: Learners are empowered for community action based on the preservation of the environment and sensibilized to sustainable practices by active participation within the community such as beach cleanups, tree planting. This participation develops a keen sense of global citizenship among learners.
- **Responsibility**: Learners become more aware of their role and responsibility in the global effort towards climate action and become future leaders and proactive agents of positive change.
- **Ready to face the future**: Participants are able to prepare and respond to hazards thanks to their knowledge and skills.
- **Interaction and networking**: Learners get the chance to interact and share ideas with their peers and with experts, including scientists. They can engage in meaningful intercultural discussions and collaborations, expanding their network within the conservation community. Opportunities can be created for students who do live within visiting distance of a site or who are connected to a UNESCO site through their research or studies to become connected virtually.
- **Intergenerational exchange and collaboration**: Learners benefit from sharing the knowledge, experiences and practices of local and Indigenous Peoples, learning more about their environment, history and culture, and strengthening their sense of belonging. Cultural heritage sites blend social, environmental, and economic issues that could be presented in the context of past, present and future.

However, to fully realize this potential, sites need to be better equipped and empowered, and this requires:

- **Engaging the whole community** to discuss sustainability challenges and identify opportunities for co-developing learning initiatives (e.g. availability of support from experts, municipalities, associations, etc.).
- **Developing specific educational tools and training** to be made available to educational officers at sites and museums.
- **Developing partnerships and collaborations** locally, nationally and globally to pool resources and expertise and share knowledge.
- **Monitoring and evaluation of the impacts** of the implemented educational activities, in particular tracking attitudinal and behavioural changes induced for learners and teachers (at school and at home).

Which learning objectives?

Learners should be able to:

- Develop a holistic understanding of the complexity of environmental challenges, of the interdependence of the SDGs and understanding of human dependence on the natural world by acquiring critical thinking, problem- solving skills and interdisciplinary thinking.
- Develop a better understanding of cultural and environmental awareness and of topics such as climate change, sustainable consumption and production, clean energy, biodiversity, waste management and marine conservation.
- Understand the concept of the carbon footprint and adopt habits such as sustainable resources use and biodiversity preservation.
- Develop emotional connections with nature and understand the vital role that nature plays in human and planetary well-being, including climate stability.
- Improve their sense of respect and protection towards our natural resources and enhance their environmental stewardship and sense of responsibility towards our planet.
- See themselves as being part of the solution and develop a sense of collective responsibility for the environment within their communities.
- Develop curiosity to build analytical skills and ownership of their own beliefs, along with creativity to strengthen their self-confidence and engagement.
- Be more open, more inclusive, and more respectful of everyone's cultural diversity.
- Strengthen their sense of community engagement, involvement and belonging, including through improved collaboration and cooperation on collective efforts.
- Know how to deliver advocacy messages and raise awareness among their peers, their community and other stakeholders.
- Promote peer to peer pedagogy and intergenerational learning.
- Develop values such as empathy for nature and living beings affected by environmental issues and compassion for communities facing ecological challenges.
- Be encouraged in pursuing innovative and creative thinking to find solutions for environmental issues.
- Learn how the cultures and practices of Indigenous Peoples, and their worldviews and cultural heritage linked to living sustainably can contribute to preserving UNESCO sites.

Teachers and educators should be able to:

- Include respect and responsibility for nature and environmental issues in their teaching, as well as share the importance of local and indigenous knowledge and practices.
- Acquire pedagogical skills on how to better integrate climate change and environmental topics into various subjects, adopt learning techniques adapted to local and cultural contexts, and how to develop meaningful and engaging extracurricular activities.
- Support curriculum activities that are more action oriented towards sustainability, and include local examples into their lessons, across all disciplines and topics.

- Propose outdoor activities to achieve the SDGs by implementing environmentally-friendly actions and demonstrating community engagement.
- Meaningfully engage with learners and foster collaboration between learners and educators, enabling more meaningful interactions to co-develop, design and implement activities.

Decision-makers should be able to:

- Be more aware and acquire new knowledge about how to empower teachers and educators to further integrate ESD and lifelong learning.
- Be encouraged to transform schools and other educational institutions into green institutions by adopting environmental standards.
- be encouraged to appreciate and understand the importance of conserving natural heritage sites and champion their continued preservation through policy frameworks for posterity.
- Be encouraged to invest and provide administrative and financial support for implementation in UNESCO sites as ideal platforms to facilitate implementation of ESD and to actively engage with local stakeholders in responding to community needs.
- Adopt a new paradigm based on scientific information for resilience and promote ESD approaches at UNESCO sites for improved resource management.
- Promote networking and collaboration between relevant stakeholders, to set up partnerships and create synergy and coherence between projects.

What learning approaches?

Learning approaches for ESD in UNESCO sites include:

- **Be place-based**: help nurture learners' sense of place and emphasize inclusion of the community in the resolution of socio-environmental issues. Create climate smart schools/green schools to ensure that students live and study in an environment that respects nature so that they can then integrate these good practices themselves.
- **Be inquiry-based**: through hands-on investigation approaches in the local context support learners to develop skills for analyzing and investigating environmental issues.
- **Be action-oriented**: add more outdoor activities to the regular curriculum targeting schools and community groups to raise awareness about climate change.
- **Be experiential**: using the UNESCO sites for learners to see and feel what they learn in classrooms, through interactive and fun activities, such as guided tours with scientists, field expeditions and on-site workshops about various topics related to climate change, to allow learners to observe, analyze, and appreciate the complexities of flora and fauna, and to learn about concrete actions for sustainable living.
- **Be creative**: developing creativity through climate change, biodiversity and environmental (and social and economic) education activities such as performance arts like theater, storytelling, music and film screenings in schools and community centres to develop creativity.
- **Be digital when appropriate**: using technology that is attractive to young people such as virtual reality provides learners with an immersive and engaging learning experience, and it helps give them a deeper sense of guardianship and get inspired about how to help protect the environment for future generations.
- **Be youth/learner-centred**: establish youth clubs within schools, enabling students to actively participate in the management and maintenance of school facilities and other parts of UNESCO sites, developing activities to sensitize communities about nature conservation and cultural heritage by exploring the connections between local communities, cultures and the environment.
- **Be inclusive**: focus not only on schoolchildren, but also on other visitors, so that they too can benefit from awareness-raising that will enable them to adopt more environmentally-friendly practices. Integrating multiple ways of knowing, with a particular focus on indigenous ways of knowing and being.

- **Be collaborative**: organize joint initiatives with school inspectors, site managers, research institutes, pilot schools within the sites, civil society, local communities and organizations. Establish a dialogue around learning about environmental and conservation issues involving educators, students and local community stakeholders from different sites. Create an annual joint calendar between the relevant stakeholders to encourage collaboration and ensure the coherence and complementarity of the activities on offer.
- **Be communicative**: use social media groups to share daily practices, achievements and challenges between UNESCO site employees, students, teachers, and community members to create drive and mutual motivation. Make connections and develop partnerships with community radios and media organizations. Organize public engagement activities and create green events to encourage active participation, strengthen solidarity within the community and their sense of belonging.
- **Be a living laboratory**: showcasing, through case studies to observe, understand and experience the impact of human activities on nature, but also the impact of nature on anthropogenic activities, and how to mitigate these impacts. Interactions between students and scientists (and/or Indigenous leaders, park rangers etc.) will help them understand climate change and the need for action through scientific explanations while encouraging potential vocations.

Further resources:

Publications/articles

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- Harnessing the potential of non-formal education for sustainability: https://eenee.eu/en/resources/library/harnessing-the-potential-of-non-formal-education-for-sustainability/

- Strategy on Education for Conservation: https://iucn.org/sites/default/files/2022-08/educationforconservation-strategy-v3.pdf
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- Learning in the Open Air: Supporting Young People to Become Outlearners: https://education-reimagined.org/learning-in-the-open-air-supporting-young-people-to-become-outlearners/
- Climate Change Resilience—The Way Forward for Learner-Centered Ecosystems: https://education-reimagined.org/climate-change-resilience/

Websites

- UNESCO Designated Sites: A Climate Change Observatory: https://www.unesco.org/en/climate-change/unesco-sites-climate-change-observatory
- UNESCO Green Citizens: https://www.unesco.org/en/green-citizens

Videos/multimedia

- Learning to protect biodiversity (video): http://www.youtube.com/watch?v=kHhspf5IfdE
- Learning to address climate change (video): http://www.youtube.com/watch?v=KJbRnv7rMkk

III. UNESCO sites as partners for ESD

UNESCO's extensive network of designated sites serves as a laboratory for innovative EE/ESD, encouraging countries to develop context-specific and locally relevant approaches. Biosphere reserves, Global Geoparks, natural World Heritage sites and Water museums provide ideal settings for experimentation and learning.

Together, they give a complete picture of celebrating our heritage while at the same time conserving the world's cultural, biological and geological diversity, and promoting sustainable economic development. Through a whole-institution approach to ESD, UNESCO has mobilized teachers, students, and communities around these sites, promoting collaboration and sustainable practices.

> Biosphere reserves are places of experimentation and life, where we rethink our relationship with nature.
>
> Audrey Azoulay, UNESCO Director-General

Biosphere reserves

Biosphere reserves are 'learning places for sustainable development'. They are sites recognized by UNESCO's Man and the Biosphere Programme as models of a sustainable future that protect and celebrate cultural and biological diversity, and that empower people to engage with one another and with nature in healthier ways.

They include terrestrial, freshwater, marine and coastal ecosystems. Each site promotes solutions reconciling the conservation of biodiversity with its sustainable use. They aim to deepen the relationship humans have with their natural environment and their respective surroundings and find solutions to the most pressing conservation and sustainability challenges facing the world today. They are places that provide local solutions to global challenges.

They are sites for promoting and demonstrating a harmonious and sustainable relationship between biodiversity conservation and socio-economic well-being of people, via research, monitoring, capacity building and participatory management, considering local and indigenous knowledge. They offer opportunities for testing transdisciplinary approaches to understand and manage changes and interactions between social and ecological systems, including conflict prevention and management of biodiversity.

A biosphere reserve consists of three zones: core, buffer and transition zone. Each biosphere reserve is intended to fulfill three basic functions, which are complementary and mutually reinforcing:

- Conservation: to support the conservation of landscapes, ecosystems, species and genetic variation;
- Development: to facilitate and promote economic and human development which is socio-culturally and ecologically sustainable ; and
- Logistic support: to support research, monitoring, education and information exchange related to conservation issues at local, national, and global levels.

The strength of biosphere reserves in terms of education lies in the fact that each site is home to unique species, ecosystems and human interactions providing a real-world context for a holistic understanding of sustainability. The natural characteristics of each biosphere reserve and its connection with human life and culture can be utilized as a source of environmental and biodiversity education for the public.

Educational and training activities have been initiated in many biosphere reserves with scientific, cultural and recreational focuses. Several biosphere

reserves are exemplifying this through support for 'ecological schools', EE/ESD centres, working groups on education and environmental awareness-raising schemes. Activities in biosphere reserves also include on-site citizen science programmes for school children and learners, as well as collaborative intertwining programmes between schools associated with different biosphere reserves.

Further resources:

Publications/articles

- UNESCO, 2013. *ESD in biosphere reserves and other designated areas: a resource book for educators in South-Eastern Europe and the Mediterranean*. Venice, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000219946.locale=en
- Utilizing Biosphere Reserves for Education for Sustainable Development: Teacher's Guidebook - Aiming for living in harmony with nature https://ecorisk.web.fc2.com/UChair/ESD-Guidebook-in-BRs-NMlXieVfKu.pdf
- Mammadova, A., 2018. *Sustainable Development Goals, learning from Mount Hakusan Biosphere Reserve*. Kanazawa University, International Student Center. https://core.ac.uk/download/pdf/196744019.pdf
- UNESCO, 2022. *Technical guidelines for biosphere reserves*. Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000375692.locale=en
- UNESCO, 2019. *Our biosphere, our future - local actions for the Sustainable Development Goals*. Paris, UNESCO. English, French: https://unesdoc.unesco.org/ark:/48223/pf0000368651.locale=en & English, Spanish: https://unesdoc.unesco.org/ark:/48223/pf0000373000.locale=en
- Youths reflect on communication's role to unlock biosphere reserves' potential in South Africa: https://www.unesco.org/en/articles/youths-reflect-communications-role-unlock-biosphere-reserves-potential-south-africa
- Barraclough, A.D., Reed, M.G., Coetzer, K., Price, M.F., Schultz, L., Moreira-Muñoz, A., & Måren, I. 2023. Global knowledge–action networks at the frontlines of sustainability: Insights from five decades of science for action in UNESCO's World Network of biosphere reserves. *People and Nature*, 5:1430–1444: https://doi.org/10.1002/pan3.10515
- Barraclough A.M.D, Schultz L. & Måren I.E. 2021. Voices of young biosphere stewards on the successes, failures, and ways forward for 74 UNESCO Biosphere Reserves across 83 countries. *Global Environmental Change*. 68, 102273: https://doi.org/10.1016/j.gloenvcha.2021.102273

Websites

- What are biosphere reserves? https://www.unesco.org/en/mab/wnbr/about
- Biodiversity, Making peace with nature: https://www.unesco.org/en/biodiversity
- Biosphere Regions at Work - Canadian Biosphere Regions Association: https://biospherecanada.ca/biosphere-regions-at-work/
- Biosphere Challenge for schools: https://biosfarprogrammet.se/projekt/biospherechallenge/
- Biosphere Challenge 2016: https://vanerkulle.org/biosfarutmaningen-2016/biosphere-challenge-2016/
- International Day for Biological Diversity | UNESCO: https://www.unesco.org/en/days/biological-diversity
- International Day for Biological Diversity | United Nations: https://www.un.org/en/observances/biological-diversity-day
- Linking Biological and Cultural Diversity: https://www.cbd.int/lbcd/
- World Network of Island and Coastal Biosphere Reserves – Experiences: http://www.islandbiosphere.org/Publicacions/llistat.aspx?tipo=EXP&keyword=76

Videos/multimedia

- Biosphere Reserve in a nutshell: https://www.youtube.com/watch?v=Gkzar079rKI
- Biosphere Reserves #proudtoshare YouTube video collection: https://www.youtube.com/hashtag/proudtoshare

World Heritage sites

The sites inscribed on UNESCO's World Heritage List are protected under the World Heritage Convention, established in 1972. Thanks to this unique intergovernmental convention, UNESCO can bring together the world's nations and people to harness conservation and sustainable development of humanity's most exceptional cultural and natural heritage, which is recognised for its Outstanding Universal Value (OUV). Outstanding Universal Value means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole.

This means that World Heritage sites belong to all the peoples of the world, irrespective of the territory on which they are located. Today, 196 countries adhere to the World Heritage Convention and have become part of an international community united in the common mission to identify and safeguard our world's most significant natural and cultural heritage for the future.

> World Heritage sites serve as invaluable learning spaces for sustainable development due to their unique blend of cultural, historical, and environmental significance. These sites provide practical examples of sustainable practices, highlight the connections between cultural and natural heritage.
>
> Razia Ramzan Dossa, Secretary General, Pakistan National Commission for UNESCO

The Convention is unique in that it links together the concept of nature conservation and the preservation of cultural sites. Strongly emphasizing the role of local communities, the Convention serves as an effective tool in addressing local and global challenges, such as climate change, biodiversity loss and sustainable socio-economic development.

For example, UNESCO natural World Heritage sites are critical for the conservation of ecosystem integrity and biodiversity. While they make up less than 1% of the Earth's surface, they harbour more than 1/5 of mapped global species richness. This includes over 75,000 species of plants and over 30,000 species of mammals, birds, fishes, reptiles and amphibians. Cultural World Heritage sites in particular can be an important ally in biodiversity conservation since around 20% of them are located in key biodiversity areas.

World Heritage sites – particularly natural ones – show both the scale of impacts resulting from climate change and the opportunities for concerted efforts to combat them. One in three natural sites and one in six cultural heritage sites are currently threatened by climate change. These sites serve as global observatories for the effects of climate change and at the same time provide lessons for adaptation and mitigation measures. They offer inspirational local solutions to this global challenge.

The importance of including World Heritage in educational programmes worldwide is emphasized in Article 27, of the Convention, which calls on all States Parties to '*endeavour by all appropriate means, and in particular by educational and information programmes, to strengthen appreciation and respect by their peoples of the cultural and natural heritage*'.

The World Heritage Education Programme collaborates with UNESCO relevant stakeholders in formal and non-formal learning contexts, schools, and youth organizations worldwide to engage young people in protecting our shared cultural and natural heritage.

Linking past, present and future, World Heritage Education aims to foster a generation that appreciates our shared heritage, understands its importance, and actively contributes to a sustainable future.

Further resources:

Publications/articles

- World Heritage in Young Hands Educational Resource Kit: https://whc.unesco.org/en/educationkit
- UNESCO, 2009. *World Heritage cultural landscapes: a handbook for conservation and management*. Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000187044
- UNESCO, 2010. *Incorporating education for sustainable development into world heritage education: a teacher's guide*. Bangkok, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000190006.locale=en
- Young Climate Action for World Heritage: https://heritagestudies.eu/youngclimateaction/en/the-project/
- UNESCO, 2005. *The Great Volga River Route (GVRR): uniting the Seas (Baltic, Black and Caspian Seas) in favour of world heritage education for sustainable development with the support of ICTs*. Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000139815.locale=en
- UNESCO and International Union for Conservation of Nature, 2023. *World Heritage: a unique contribution to biodiversity conservation*. Paris, UNESCO and Gland, IUCN. https://unesdoc.unesco.org/ark:/48223/pf0000385392.locale=en
- Patrimonio mundial en Argentina: Qhapaq Ñan según los jóvenes (in Spanish): https://www.educ.ar/recursos/158461/patrimonio-mundial-en-argentina-qn-segun-los-jovenes

Websites

- UNESCO World Heritage Centre: https://whc.unesco.org/
- UNESCO World Heritage Education Programme: https://whc.unesco.org/en/wheducation
- World Heritage Map: https://whc.unesco.org/en/wallmap/
- World Heritage Volunteers Initiative: https://whc.unesco.org/en/whvolunteers/
- World Heritage Youth Forum: https://whc.unesco.org/en/youth-forum/
- Natural World Heritage: https://whc.unesco.org/en/natural-world-heritage/
- We are all Future-keepers: https://whc.unesco.org/en/futurekeepers
- Environmental DNA Expeditions in UNESCO World Heritage Marine Sites: https://www.unesco.org/en/edna-expeditions
- IUCN (International Union for Conservation of Nature): https://www.iucn.org/
- ICOMOS (International Council on Monuments and Sites: https://www.icomos.org/en
- ICCROM (International Centre for the Study of the Preservation and Restoration of Cultural Property): https://www.iccrom.org/

Videos/multimedia

- World Heritage explained: https://www.youtube.com/watch?v=lOzxUVCCSug&t=1s
- Patrimonito's World Heritage Adventures: https://whc.unesco.org/en/patrimonito
- Nature's crown jewels: An introduction to Natural World Heritage (free online course): https://iucnacademy.org/group/70
- UNESCO Natural World Heritage sites (video) -- https://youtu.be/dyrfNSJa7sw
- Dive into Heritage: https://whc.unesco.org/en/dive-into-heritage/

Global Geoparks

UNESCO Global Geoparks are single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education and sustainable development. The geoparks explore, develop and celebrate the links between geological heritage and all other aspects of the area's natural; cultural and intangible heritages, to enhance awareness and understanding of key issues facing society, such as using our earth's resources sustainably, mitigating the effects of climate change and reducing natural hazard-related risks. They aim to reconnect human society at all levels to our planet.

> Geodiversity plays a fundamental role in human well-being, sustainability and the preservation of world heritage, issues affecting the whole planet.
>
> Audrey Azoulay, UNESCO Director-General

By raising awareness of the importance of the area's geological heritage in history and society today, UNESCO Global Geoparks give people a sense of pride in their region and strengthen their identification with the area. The creation of innovative local enterprises, new jobs and high-quality training courses is stimulated as new sources of revenue are generated through geotourism, while the geological resources of the area are protected.

Furthermore, these geoparks empower local communities and give them the opportunity to develop cohesive partnerships with the common goal of promoting the area's significant geological processes, features, epochs, historical themes linked to geology, or outstanding geological beauty. UNESCO Global Geoparks are established through a bottom-up process involving all relevant local and regional stakeholders and authorities in the area (e.g. landowners, community groups, tourism providers, Indigenous Peoples, and local organizations). This process requires firm commitment by local communities, a strong local multiple partnership with long-term public and political support, and the development of a comprehensive strategy that meets all of the communities' goals while showcasing and protecting the area's geological heritage.

It is a pre-requisite that all UNESCO Global Geoparks develop and operate educational activities for all ages to spread awareness of geological heritage and its links to other aspects of our natural, cultural and intangible heritages. By its very nature a trip to a Global Geopark is an immersion in history, as students look back hundreds and thousands of years through the geological record. Global Geoparks offer educational programmes for schools or special activities for children through, for example, Kids' Clubs or special Fossil Fun Days. These geoparks also offer education, both formal and informal, for adults and retired people while many provide training for local people who can then, in turn, teach others.

While a UNESCO Global Geopark must demonstrate geological heritage of international significance, the purpose of such a park is to explore, develop and celebrate the links between that geological heritage and all other aspects of the area's natural, cultural and intangible heritages. It is about celebrating how our planet and its 4,600 million year-long history has shaped every aspect of our lives and our societies.

Further resources:

Publications/articles

- Geopark Management Toolkit – Geo-Education: https://www.geoparktoolkit.org/%E2%80%AFgeo-education/#GE3
- Geoparks & Oceans: https://www.globalgeoparksnetwork.org/sites/default/files/2024-03/GGN-GEOPARKS-AND-OCEANS.pdf
- UNESCO Global Geoparks: From geological heritage to a sustainable future: https://geopark-alb.de/assets/broschueren/UNESCO-Geoparks-EN.pdf
- Diversity sustains life – exhibition: https://unesdoc.unesco.org/ark:/48223/pf0000383371.locale=en
- 6th October – International Geodiversity Day: https://unesdoc.unesco.org/ark:/48223/pf0000382298.locale=en

Websites

- International Geoscience and Geoparks Programme: https://www.unesco.org/en/iggp
- IUGS Young Reporters – Voices for the Future: https://www.iugs-young-reporters.com/

Ecohydrology Demonstration Sites and Water Museums

Ancient systems of knowledge and far-seeing management visions forged by countless trial and error approaches have produced lasting benefits for biodiversity and ecosystem services with which human societies have coexisted for centuries. Today, these systems can still inspire more farsighted uses of water with examples of nature-based solutions and zero-waste technology.

UNESCO Ecohydrology Demonstration Sites are those where the ecohydrology approach is implemented using a variety of different solutions to solve both social and environmental issues.

Water Museums around the world form a unique repository of the different ways in which humanity connects with water and its natural and cultural heritage. They display and explain the function of ancestral techniques, legacies, and traditional knowledge to promote the world's outstanding variety of water-related heritages and values that have been passed down through generations. The Global Network of Water Museums, a flagship of UNESCO's Intergovernmental Hydrological Programme, aims to coordinate the activities of water museums and other institutions dealing with water management in all parts of the world. It promotes fundamental water heritage values of all kinds – whether natural, cultural, tangible or intangible.

While promoting water awareness efforts, most of these museums and institutions operate in isolation from each other. To avoid fragmentation, there is a need to exchange experiences and good practices through a large network, so that new perceptions and attitudes towards water and more farsighted management models are disseminated to large audiences. Together water museums can play a key role in strengthening water awareness education worldwide.

> Water is a planetary good, and we are part of this planet, which we must protect, respect, and enjoy.
>
> Gabriel Mancilla, Executive Director of the UNESCO Water Centre for Arid and Semi-Arid Zones in Latin America and the Caribbean

Further resources:

Publications/articles

- UNESCO, 2012. *Learning about Water: Multiple-Perspective Approaches*. Paris, UNESCO. http://unesdoc.unesco.org/images/0021/002154/215432e.pdf
- Wang, H. and Meng, Y. 2021. *Water education for kids (age 3-7)*. Beijing, Popular Science Press. https://unesdoc.unesco.org/ark:/48223/pf0000380885.locale=en
- Wang, H. and Meng, Y. 2021. *Water education for children (age 7-12)*. Beijing, Popular Science Press. https://unesdoc.unesco.org/ark:/48223/pf0000380887.locale=en
- Wang, H. and Meng, Y. 2021. *Water education for teenagers (age 12-16)*. Beijing, Popular Science Press. https://unesdoc.unesco.org/ark:/48223/pf0000380888.locale=en
- UNESCO World Water Assessment Programme, 2020. *Water and climate change: coursebook*. Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000376925.locale=en
- UNESCO, 2021. *Water education for climate resilience in Asia and the Pacific: a regional curriculum*. Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000380263.locale=en
- UNESCO, 2023. *River culture: life as a dance to the rhythm of the waters*. Paris and Beijing, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000382775.locale=en
- UNESCO and Korea Institute of Geoscience and Mineral Resources, 2017. *Groundwater: shared resources for all*. Bangkok, UNESCO. http://unesdoc.unesco.org/images/0026/002612/261258e.pdf
- Water Challenge Badge: https://www.fao.org/yunga/resources/challenge-badges/water/en/
- Alter Aqua - Educational Material on Non Conventional Water Resources: https://medies.net/wp-content/uploads/2019/12/NCWRM_2014.pdf
- Know, Feel, Act! To Stop Marine Litter: https://www.marlisco.eu/education.en.htmlf

Websites

- IGlobal Network of Water Museums: https://www.watermuseums.net/
- Ecohydrology web platform: http://ecohydrology-ihp.org/demosites/
- Global Water Education Network (GWEN): https://cap-net.org/global-water-education-network/
- AQUAPLAY: https://www.watermuseums.net/education/aquaplay/
- The water we want: https://thewaterwewant.watermuseums.net/
- Exhibition 'Waterstories': https://education-for-climate.ec.europa.eu/community/event/exhibition-waterstories

IV. Ideas for activities

The following section offers suggestions for a range of activities and ideas that can be implemented in UNESCO sites and are gathered from on-going activities and experiences in sites in different parts of the world. The sites offer very different forms of learning interactions, from a half-hour visit to a visitor centre to a two-hour guided hike to a week-long stay at a school camp.

Grounded in the holistic learning approach of ESD, these activities address critical issues while nurturing essential competencies such as system-thinking, problem-solving and collaboration to help learners understand the complexity of climate change and its linkages with biodiversity loss, food security, ocean conservation, gender inclusivity, living heritage, energy and sustainable lifestyles.

> We can change the world and make it a better place.
> It is in your hands to make a difference.
>
> Nelson Mandela

On site, experiental and immersive activities

Immersive experiences offer interactive and engaging ways to explore and develop a greater appreciation for the importance of preserving the environment, and cultural and natural heritage. This immersive approach makes learning more dynamic and memorable than traditional methods.

Creating immersive educational experiences also includes creating virtual representations and games of spaces, places and projects to increase awareness and engagement in a more accessible and fun way. Interactive elements such as quizzes, simulations, and storytelling, capture the attention, fostering a deeper interest in history, culture, and conservation.

Many sites have virtual tours and can be a part of studies during class time, as part of homework assignments, or as research sites. Virtual tours offer access regardless of geographical and financial limitations. They can provide opportunities for people who do live within visiting distance of a site to become connected virtually.

Activity – Amazing Places projects

Purpose: The goal of the project is to shed light on the ecological significance of well-loved outdoor spaces and to inspire a new or renewed connection with nature, including a positive future for all living species, by facilitating collaboration, coordinating participatory research, and supporting environmental, social, cultural, and economic sustainability.

How it works: The project connects residents and visitors with nature by helping them experience a deeper appreciation of the natural wonders of the region. An Amazing Place may be a powerful and majestic vista that tells a unique and unforgettable story. It may take your breath away or be somewhere that simply causes you to pause and draw on a deep well of energy emanating from its serene beauty. An Amazing Place can represent different things to different people: mystical, magical, grandiose, bizarre, unique, breathtaking and awe-inspiring, or even a combination of all of these things.

The Amazing Places project began in 2010 with the Fundy Biosphere Reserve and is now thriving in five of Canada's UNESCO biosphere reserves in New Brunswick, Ontario, and British Columbia. One example of this is the Mount Arrowsmith Biosphere Region (MABR) where the project aims to encourage outdoor play, sustainable living, and nature connectedness using interpretive signage, online engagement, and outdoor activities that are fun for all.

Activity – Teacher education projects

Purpose: Through immersive experiences, participating teachers develop appropriate models and methods for the learning and teaching of EE and ESD for formal/informal settings while critically evaluating instructional materials and resources from a variety of sources.

How it works: Course experiences are co-led by local and Indigenous knowledge holders who set the deep-time context for land-based and place-based approaches to learning and teaching. In addition, participants consider a variety of perspectives in their interpretation of EE and ESD including regulatory, socio-economic, legalistic, aesthetic and scientific frameworks.

Set in the unique context and location of the Átl'ka7tsem/Howe Sound Biosphere Region (Canada), Simon Fraser University offers a field course in EE for teachers in collaboration with the Sḵwx̱wú7mesh (Squamish) First Nation, the Institute for Environmental Learning (IEL) and the Howe Sound Biosphere Reserve Initiative Society. Set in the context of selected locations within the biosphere reserve, and using the theme 'learning is like a river,' the course examines educational problems entailed in developing human awareness and understanding of the environment. Each location for the course is selected for its importance in local and indigenous knowledge and ecological significance.

Throughout the course, teachers share artifacts, ideas, writings and lessons using a portfolio of their own design, to demonstrate learning and connections made between conceptual frameworks for EE/ESD and their own developing teaching practices. After reflecting on and critiquing the variety of field experiences on the course, participating teachers develop comprehensive lesson plans for educational fieldtrips (designed at various grade levels K-12) for locations within the Átl'ka7tsem/Howe Sound

Biosphere Region. In the spirit of reciprocity, these lesson plans are freely available to teachers in the region and can be downloaded.

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Activity – Interactive workshops

Purpose: Offer on-site practical workshops within UNESCO sites to engage visitors and local communities in hands-on learning experiences that promote EE/ESD. These workshops serve as platforms for experiential learning, allowing participants to actively engage with the unique geological, cultural, and artistic elements of the sites.

How it works: Host workshops and experiential learning activities at UNESCO sites using them as living laboratories for sustainability education. These workshops could cover topics such as traditional craftsmanship, cultural heritage preservation, and sustainable tourism practices, providing learners with insights into the interconnectedness of culture, heritage, and sustainability.

The Kindergarten of the Lagoon is part of Sea Beyond, a 2019 project led by Prada Group and UNESCO's Intergovernmental Oceanographic Commission which aims to promote education for the preservation of the sea and its resources. It promotes an innovative pedagogical approach of outdoor education and Ocean Literacy in the context of the World Heritage Site of Venice and its Lagoon (Italy). It is aimed at kindergarten children, aged between 3 and 5 years old, their families and the kindergarten teachers involved in the project. The outdoor education experience offers a closer connection to nature, in which the environment becomes a school in which children learn and discover. In addition, ocean literacy and its principles strengthen the connection and influence between people and the ocean.

Practical workshops, such as the pottery art workshop held at Tabas UNESCO Global Geopark Visitor Centre, serve to develop children's thinking power and familiarize them with traditional arts. In collaboration with Kurit Ceramic Studio, the workshop introduces participants to various types of clay, different shaping methods, and the creation of simple forms, fostering a deeper connection to the local culture and heritage.

Prior experiences from the Education University of Hong Kong and the Wildlife Institute of India demonstrate the importance of incorporating experiential learning as fundamental educational components through structured courses. A course from the Education University of Hong Kong provides students with the knowledge of the concepts and theories in conserving, monitoring and managing UNESCO's World Heritage sites, especially those related to natural habitats and in-situ conservation. A compulsory one-week experiential learning field study allows students to visit, observe and investigate UNESCO's World Heritage sites.

Activity – Collaborating with local environmental associations

Purpose: Working with local associations helps foster trust and engagement within the community and makes a positive impact on the local community and the environment. These collaborations often focus on community engagement, environmental protection, sustainable development and cultural preservation.

How it works: Working with local associations in UNESCO sites can provide the environment and opportunities to strengthen education and the active participation of youth involving them through informal education and cultural activities. Strengthening young people's skills, capacity-building and increasing awareness of cultural and social contexts and the environment in which they live and work, is the way to actively and effectively include and empower young people.

Bee the Buzz of the Reserve is a project integrating climate-smart technologies, sustainable education, and the green economy to champion bees at the UNESCO St Mary's Biosphere Reserve in Saint Kitts and Nevis. This locally driven and managed project places sustainable education at the core of its model. The association organizes awareness-raising events and is looking to develop practical apicultural skills in primary and secondary schools. The project also develops educational opportunities for youth to learn about the significance of beekeeping and gain the technical expertise needed for apiculture.

The "Eyes of the Reef Network" of Hawaii (USA) is a community reporting network for coral disease and bleaching; marine invasive species; crown-of-thorn seastars and fish diseases, and submit reports for decision and policy making. It enables all community members and ocean users to contribute to the long-term protection of local reefs.

Activity – Meaningful youth engagement and action

Purpose: Empower local young people as climate advocates and stewards of their natural environment, addressing climate threats to UNESCO sites while fostering environmental awareness at an international scale. Engage young people as learners, educators and community representatives in addressing the impact of climate change in UNESCO sites.

How it works: Activities are developed to equip young participants with knowledge and skills to address climate challenges in UNESCO sites. These activities are structured to enhance the engagement of young people, both as active stakeholders in the designing of climate change education and environmental actions, and as beneficiaries of educational programmes and lifelong learning initiatives around UNESCO sites.

The Climate Education Programme at Petra World Heritage Site (Jordan) was one of the 5 selected youth-led projects from the 13th UNESCO Youth Forum, implemented in the framework of the UNESCO Global Youth Grant Scheme. By establishing the Petra World Heritage Site as a hub for climate education, this project aims to build the capacities of Jordanian youths aged 18 to 25 to become empowered climate educators, ESD advocates and community leaders to address the social impact of climate change on Petra. Its key actions are:

- Design and develop a curriculum and pioneering climate education programme on climate change for youth at the cultural heritage site of Petra.
- Provide climate education resources, train young facilitators, and promote knowledge exchanges through activities with international experts.

Further resources:

Publications/articles

- Outdoor Education and Social-Emotional Learning – Inclusive Perspectives in Primary Education: https://pressbooks.pub/inclusiveperspectives/chapter/outdoor-education-and-social-emotional-learning/
- Nature interpretation: https://www.slu.se/en/Collaborative-Centres-and-Projects/swedish-centre-for-nature-interpretation/nature-interpretation-in-sweden/
- Kindergarten of the Lagoon empowers youth in becoming the future Generation Ocean: https://www.unesco.org/en/articles/kindergarten-lagoon-empowers-youth-becoming-future-generation-ocean
- Emma Hoskins: Charting a path from adventure to advocacy: https://www.unesco.org/en/articles/emma-hoskins-charting-path-adventure-advocacy?hub=802
- UNESCO x Guerlain Women for Bees programme celebrates World Bee Day: https://www.unesco.org/en/articles/unesco-x-guerlain-women-bees-programme-celebrates-world-bee-day

Websites

- Virtual Voyages: Augmented and Virtual Reality Point Toward an Immersive Learning Future: https://www.gettingsmart.com/2024/06/18/virtual-voyages-augment-and-virtual-reality-point-toward-an-immersive-learning-future/
- OneZoom, a view of all known life: https://www.onezoom.org/introduction.html
- Amazon Rainforest - An Interactive Experience: https://www.pbs.org/wnet/nature/amazon-rainforest/22416/
- Wild for Life - take a journey: https://wildfor.life/journeys
- Sanctuaries 360°: Explore the Blue: https://sanctuaries.noaa.gov/vr/

Videos/multimedia

- Story of Flowers, a breathtaking botanical animation: https://thekidshouldseethis.com/post/story-of-flowers-botanical-animation-azuma-makoto
- At the Forest School: Unveil Grey Coupland's Miyawaki forest revolution: https://www.unesco.org/en/articles/forest-school-unveil-grey-couplands-miyawaki-forest-revolution-unesco-green-citizens-podcast
- Learning in the Desert: Viktoria Keding's oasis of environmental education: https://www.unesco.org/en/articles/learning-desert-viktoria-kedings-oasis-environmental-education

Intergenerational educational activities

Given that 70% of youth surveyed said they could not explain climate change,[1] UNESCO sites emerge as outstanding educational centres and vibrant laboratories for sustainability that are especially appealing to young people. But youth are also drivers of change, with eight out of ten young people taking action to tackle this crisis.[2] Immersed in the UNESCO site ecosystems, young individuals are not only empowered through ESD knowledge, but also become active participants in EE/ESD, innovation and leadership.

By engaging directly with nature and people, youth can take ownership of sustainability goals, explore sustainable practices, and contribute to developing innovative solutions-based and action-oriented learning methods to address ecological and social challenges. These experiences transform them from passive learners into dynamic agents of change. The UNESCO youth networks, such as MAB Youth, ESD Young Leaders, SDG4 Youth or the UNESCO Youth Climate Action Network are also powerful drivers to build an eco-conscious global citizenship and lifelong learning skills for climate action, by facilitating hands-on involvement in environmental advocacy and action both in UNESCO sites and beyond.

Educational practices that use intergenerational learning approaches have been implemented across the world in various cultural, social and economic contexts. Intergenerational learning takes place in homes and in communities, including online, and involves different community members. It captures the multi-directionality of interactions, i.e. children can learn from adults; adults from children; younger children from older siblings, and from other relatives. Therefore, it is a process in which the whole community learns together.

1. UNESCO, Youth demands for quality climate change education, https://unesdoc.unesco.org/ark:/48223/pf0000383615
2. Plan International, 2023, Climate change activism, https://plan-international.org/youth-empowerment/climate-change-activism

Activity – Environmental history and memoirs

Purpose: To understand changes, it is necessary to identify and record how the local environment has changed and how this has impacted life in the community. It is important to draw attention to the unique history of each UNESCO site and the myriad activities and resources that can be utilized to emphasize these unique histories. Each site holds within it a history that has developed over time, that is defined by the local culture and traditions but also through its physical landscape. It is necessary for educators and students to become aware of this history when undertaking activities within UNESCO sites.

How it works: An Environmental Memoir is a biography that illustrates the relationship between humans and their environment. These are illustrated through oral histories recounted by community elders. They are important sources of information that detail the evolving relationship a community has with its surrounding environment. They are collected from community elders who can provide personal accounts of how their surrounding environment has changed and how this change has impacted the lives of those around them.

The collected Environmental Memoirs are the living testimonies of people and communities within their surrounding environments. They can be used to better understand and take care of planet Earth, and can be written by anyone. Once you have identified a community elder to interview and a specific local environmental issue, you will need to focus on developing interview questions about the past, present and future. Here are some example questions to get you started:

- Can you describe what your community looked like when you were in primary/high school?
- How has it changed?
- When did it change?
- Why did it change?
- How does this make you feel?

Studying the geography of coastal regions and underwater landscapes allows us to see the effects of climate change and sea level rise over time. Underwater archaeological sites, such as the wreck of the Nuestra Senora de las Mercedes or the ancient city of Heraklion, provide tangible links to historical events and cultures. Studying underwater heritage highlights the diverse ways in which different cultures have utilized and revered the oceans. This fosters respect for cultural diversity and heritage conservation.

Activity – Developing a Living Learning Hub

Purpose: Start using UNESCO sites as platforms for sustainable development and for conducting ESD activities, transforming each resident into a 'teacher' and the entire community into a Living Learning Hub.

How it works: With the emphasis on regional collaboration with local governments, NGOs and communities, activities are developed and undertaken to motivate students and local residents to contribute to regional development through the promotion of a variety of ESD activities designed to solve local issues in concert with different regional stakeholders

Kanazawa University received the 2023 UNESCO-Japan ESD Prize for its project 'Intergenerational Learning on ESD to revitalize remote communities inside Japanese UNESCO biosphere reserves and Global Geoparks'. This project has motivated locals to apply for several external funds to increase regional revitalization. Positive outputs so far include: an increased number of small businesses and jobs

for young residents, the creation of webpages, more crowdfunding opportunities, and the collective renovation of abandoned houses.

This includes an SDG learning project conducted by Kanazawa University in Mount Hakusan Biosphere Reserve (Japan) in order to create a new methodological approach, through the practical implementation of the SDGs inside the rural areas, and raise awareness in youth about a range of social, cultural, economic and environmental issues. To build awareness about the SDGs, fieldwork activities were performed in the form of community service and participatory approaches during summer and winter seasons.

Activity – Traditional skills workshops

Purpose: Organize comprehensive workshops within UNESCO's sites facilitated by older community members where students can learn traditional skills deeply rooted in the local culture and heritage. These workshops aim to foster intergenerational learning and skill-sharing, bridging the gap between old and young.

How it works: Through hands-on experience students gain practical skills but also develop a profound appreciation for the tangible and intangible cultural heritage preserved within UNESCO sites. Students have the opportunity to appreciate the intricate connection between cultural heritage and sustainable development, understanding how traditional practices have sustained communities over generations. Through these intergenerational on-site experiences, students develop a deep connection with their community and UNESCO sites, fostering a sense of ownership and stewardship towards both.

School field trips in the Colca y Volcanes de Andagua UNESCO Global Geopark (Peru) involve meetings with elders from the local community explaining how to plant local crops and sharing wisdom across generations. Chuño is a traditional freeze-dried potato which plays a significant role in Quechua and Aymara communities of Bolivia and Peru, dating back to before the time of the Inca Empire in the 13th century. Both natural aspects, such as local geology or minerals present in the local soil, and cultural aspects such as legends, traditions or spiritual meanings are investigated to prepare a new captivating narration.

The Vulkaneifel UNESCO Global Geopark (Germany) has developed a number of ESD initiatives to provide a holistic view of the earth system, in which participants learn about the past of the earth's history and use ESD methods to develop ideas for shaping the future together. Primary school students familiarize themselves with the extraction of unique rocks formed by volcanism which are in demand worldwide as mass raw materials. The young students learn about the properties of the rocks and the changes in the landscapes caused by the extraction. The aim is for learners to actively engage with the sustainability dilemma between the extraction of raw materials and the preservation of the landscape and the secondary biotopes. Cooperation with daycare centres and schools help reach children and enable them to experience nature in a variety of ways: they learn to distinguish between different animal and plant species, get to know volcanoes and maars and thus sharpen their perception of the diversity in nature.

Looking at the marine world, workshops about underwater and coastal cultural heritage such as maritime literature, oral traditions and traditional practices, fosters cultural understanding and promotes respect for diverse cultural identities.

Activity – Elders' wisdom sessions

Purpose: Organize immersive sessions within UNESCO sites where elders from local communities share their traditional knowledge and wisdom with younger generations. Elders play a crucial role as keepers

and transmitters of culture, bridging past and future generations.

How it works: The sessions go beyond traditional classroom learning as they provide students with a unique opportunity to connect with their cultural roots and understand the deep connections between past, present, and future generations. Elders are often involved in cultural activities, ceremonies, and educational programmes, sharing their wisdom and experiences with younger generations. By engaging directly with elders, students gain insights into traditional practices, stories, and values that have sustained communities for centuries.

Reconnecting with their ancestral knowledge and voyaging culture is essential for the inhabitants of Taumako, one of the Solomon Islands. On this Pacific Island, the elders set up the Holau Vaka Taumako Project to share their know-how between generations and with other islands in the Pacific. Shipbuilding and navigating knowledge and skills are being transmitted to new generations by elders passionately committed to maintaining an active and dynamic voyaging tradition. Youth learn from their elders and use only sustainable local natural materials, ancient tools and traditional methods to construct the vessels and learn to navigate.

Through the collective creation of traditional ecological calendars, which combine ancestral knowledge with modern environmental data, community members, including elders and youth, from the La Encrucijada Biosphere Reserve in Chiapas, Mexico, collaborated in documenting and preserving indigenous knowledge about ecological cycles and sustainable practices. These calendars are tools to facilitate resilience and adaptive management of natural resources and landscape, while also fostering intergenerational dialogue and enhancing community resilience against climate change. By making visible the ecological cycles that govern the lives of all beings within the community, the calendars help ensure that traditional knowledge is integrated into contemporary environmental management. Once validated by community members, the printed calendars are distributed to local schools, community leaders, scientists, and biosphere reserve managers, to ensure that all relevant stakeholders have access to this valuable tool. This project not only strengthens cultural identity and promotes sustainability but also equips communities to better adapt to environmental changes.

Activity – Developing ESD Learning Centres

Purpose: Establishing an ESD learning centre in a UNESCO site, in order to support scientific research, facilitate interdisciplinary education, foster a culture of environmental responsibility and sustainability, and leave a lasting impact on future generations.

How it works: Following stakeholder consultations and engagement, an ESD learning centre is established in a UNESCO site and, through multipartner collaboration, activities are offered there.

UNESCO is supporting the development of an ESD learning centre in a public sector school within the Ziarat Juniper forests Biosphere Reserve (ZJBR) in Balochistan, Pakistan. The juniper forest provides an ideal pilot site due to its ecological significance, rich biodiversity, cultural importance, and potential for eco-tourism and sustainability education. The centre will offer hands-on learning experiences to students promoting biodiversity conservation and sustainable land management, while engaging the local community and fostering understanding of community-based disaster risk management (CBDRM).

In the Lower Prut Biosphere Reserve (Moldova), to enhance information and awareness about the value of the protected area and its ecosystem services, an educational centre was established as a learning hub of EE. This centre is expected to play an active role in implementing climate change education, along with pilot schools. A series of teaching and learning activities have been carried out by the schools and the centre, engaging learners, teachers, and local communities.

Further resources:

Publications/articles

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- Uniting Generations and Sharing Power to Transform Education guide: https://neweducationstory.big-change.org/wp-content/uploads/2023/09/Uniting-Generations-and-Sharing-Power-to-Transform-Education_2023.pdf
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- Indigenous foodways take root in local schools in Namibia and Zimbabwe: https://www.unesco.org/en/articles/indigenous-foodways-take-root-local-schools-namibia-and-zimbabwe
- Global Youth Biodiversity Network (GYBN) Tools for young people: https://www.gybn.org/toolkits-publications
- Libraries and parks: A nature-smart partnership: https://www.childrenandnature.org/resources/fnn-libraries-and-parks-a-nature-smart-partnership/

Websites

- Meaningful Youth Engagement: https://www.unesco.org/en/youth/engagement?hub=390
- UNESCO Youth Climate Action Network (YoU-CAN): https://www.unesco.org/en/youth/climate-action-network?hub=390
- Youth Action for Nature and Well-being: https://www.yafnaw.eu/
- Youth Education for Sustainability: https://www.gaiayes.com/
- Bridging Ages: https://bridgingages.com/
- Educating to Implement the 2001 Underwater Cultural Heritage Convention: https://www.unesco.org/en/node/79959?hub=412
- Theatre of the 7 Directions: https://theatreofthe7directions.com/

Videos/multimedia

- Guiding and Storytelling for an Impactful Ecotourism Experience (free online course): https://iucnacademy.org/group/118
- Designing an Attractive Ecotourism Itinerary (free online course): https://iucnacademy.org/group/119
- Journey into Biodiversity: Discover Pati's story: https://www.unesco.org/en/articles/journey-biodiversity-discover-patis-story-unesco-green-citizens-podcast
- Omori, a fascinating Japanese village for sustainability: https://youtu.be/hCOJKKMkNPs

Inclusive educational activities

Nature is both a concrete example of diversity and a catalyst for inclusion. Inclusive education understands that all people are capable of learning with their peers and all individuals benefit from learning alongside those who have differing abilities. Thus there is a need for facilitated learning activities that can engage people of diverse backgrounds and abilities and with different learning styles and that can be adapted for different teaching and learning contexts.

Education for sustainability in UNESCO sites should incorporate diversity into an inclusive and equitable system. It should serve marginalized communities by using all types of education and match learning to the local context. Recognizing and incorporating indigenous and local knowledge and belief systems in education can inspire better stewardship of the planet. It fosters synergy and connections between groups in society and local stakeholders to tackle environmental challenges.

Creating inclusive and impactful outdoor learning experiences is essential for fostering connections to nature, accommodating different learning styles and promoting environmental stewardship among young people.

Activity – Cultural diversity through folktales and storytelling

Purpose: Studying cultural heritage such as traditional songs or practices, folktales, maritime literature, and oral traditions allows students and visitors to engage in the creation of art, poetry, or music as a method of engaging cultural exchange. Each person brings worldviews and cultural traditions that help bind the individual to a specific cultural group. In a world where mobility is increasingly common and easy, people of different cultures are crossing paths and living closely together.

How it works: Organize storytelling sessions led by local storytellers to convey important lessons about the relationship between humans and their environment, enriching the cultural and historical context of UNESCO sites. These sessions can highlight traditional knowledge, cultural practices, and historical events that illustrate the significance of heritage conservation and sustainable development.

Creativity can be a means to explore reality with new eyes and ears. Active listening, sensorial drawing, creative writing and physical theatre can be some of the tools used to engage in a new dialogue with nature. The arts offer tremendous potential for enriching, enlivening and propelling learning to transform individuals and communities.

Having existed through centuries and generations, folktales are cherished for their uniqueness from other types of literary fiction. In line with UNESCO's Convention for the Safeguarding of Intangible Cultural Heritage (2003), folktales play a critical role in delivering age-old but relevant messages. For instance, such tales can explore cultural diversity and how rice was introduced to Java in Indonesia. (https://multoghost.wordpress.com/2013/04/15/how-rice-came-to-earth-a-javanese-folktale/)

Tell your living heritage story, complemented with the World Heritage in Young Hands Educational Resource Kit, could be used as a refence of how storytelling can contribute to drive the conversation. By implementing these activities on-site, educators can help their students to generate a sense of belonging and empathy.

Activity – Multilingual interpretation

Purpose: To ensure inclusivity and accessibility for visitors from diverse linguistic backgrounds, with special consideration for Indigenous Peoples and local communities living near the sites, UNESCO sites should prioritize multilingual interpretation educational materials.

How it works: This comprehensive approach involves translating signage, brochures, and educational resources into commonly spoken languages in the region, as well as allowing visitors to engage with the site's history, culture, and environmental significance through their native language.

Moreover, efforts should be made to involve local Indigenous Peoples in the translation process, ensuring that their languages and perspectives are accurately represented.

The Yaku Kawsay Community Tourism Centre, an initiative of the Kichwa Indigenous Peoples, located in the Yasuní Biosphere Reserve (Ecuador), is an environmental interpretation centre managed by 15 Kichwa families that seeks to preserve and share their cultural traditions and respect for nature. Visitors learn about the regional aquatic fauna through life-size wooden carvings, enjoy interpretive trails, taste traditional gastronomy, buy locally produced handicrafts, and participate in activities that connect nature conservation and the local identity and traditions of the Kichwa community. Youth are also trained in crafting wooden figures of the local wildlife which can be sold to visitors and information panels which improve displays in the interpretation centre.

Activity – Sensory experiences

Purpose: Create sensory-rich learning experiences that engage all senses, making learning more accessible to people with different abilities and learning styles.

How it works: This can include interactive exhibits, tactile models, and audiovisual presentations that cater to a variety of sensory preferences and enhance the overall educational experience for visitors. This is especially important for visitors with visual impairments, for whom tactile maps and other accessible materials should be provided to facilitate navigation and understanding of the site's layout and features. These maps can include Braille labels and raised textures allowing visually impaired visitors to explore the site independently and gain a deeper appreciation of its cultural and natural heritage.

Museums and aquariums can create interactive exhibits that showcase underwater artifacts and the stories behind them. For instance, virtual reality and augmented reality technologies can offer immersive experiences, allowing visitors to 'dive' into underwater sites without getting wet.

Unesco4All Tour recreated UNESCO World Heritage sites from across Europe into 3D tactile models with built in audio technology that allow people with visual impairments to learn, feel and engage with history. The models replicate the texture, design and structure of the historical sites and their artefacts which users can engage with through touch and feel. (University of the West of England, 2021)

Activity – Geopark management toolkit

Purpose: Utilize resources such as the Geo-Education section of the Geopark Management Toolkit, developed under the auspices of the European Union Interreg-funded Atlantic Geoparks Project, to guide educational initiatives within Global Geoparks.

How it works: The toolkit offers practical guidance on leveraging geoparks for educational purposes, including case studies and strategies for engaging learners.

Among this, they mention the development of a 'Geo-pack' of educational material, that is customized based on the intended age group. Additionally, the case studies included are the following:

- Case Study 1 tells the story of how a secondary school (children aged between 11 and 18) geography fieldwork course within a Geopark was developed together with supporting information for the teachers themselves.
- Case Study 2 shows a very effective template for running an open access non-formal geology evening course.
- Case Study 3 shows how a geopark taught teachers how to integrate earth sciences into their own teaching.
- Case study 4 describes a transnational approach from the Basque coast.

Activity – Floor and board games

Purpose: Incorporating board games into educational activities about UNESCO sites offers a dynamic and effective way to engage learners, simplify complex topics, and foster essential skills while promoting environmental awareness and advocacy.

How it works: The games aim to sensitize players on caring and valuing our precious natural resources which are threatened by a number of factors including over-extraction, reckless use, mismanagement, leakages, climate change, pollution, etc. but also to motivate them to adopt a responsible attitude as consumers, citizens, voters, etc.

Based on the popular game 'Snakes & Ladders', A watery "Snakes & Ladders" floor game was developed. In this version, instead of ladders and snakes, players encounter irrigation hoses which take them up and water pipes which take them down. In order to move up faster, players have to answer a series of questions on water.

UNESCO developed a board game called The water manager in you! This game has been developed for secondary school student and is about learning what Integrated Water Resource Management (IWRM) is and how to reduce flood and drought risk in a river basin. This interactive game aims to show and raise awareness on the continuity of water flow within a watershed and how decisions taken at one point of the watershed can affect other points, upstream and downstream. With the use of virtual reality headsets provided with the game, students can visualize the complex IWRM concepts in easily understandable format. The game has been used to raise awareness of students for the last few years in Pakistan during events like Pakistan Water Week.

The VITA Board Game is being developed by UNESCO to offer an engaging and educational approach to understanding the complexities and significance of UNESCO Biosphere Reserves. It's a valuable educational tool for schools, community groups, and environmental organizations, providing a fun and effective way to teach about biosphere reserves.

Further resources:

Publications/articles

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- UNESCO-IBE, 2021. *Reaching out to all learners: a resource pack for supporting inclusive education*. Geneva, UNESCO-IBE. https://unesdoc.unesco.org/ark:/48223/pf0000383824.locale=en
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- Justice, Equity, Diversity, and Inclusion Resources - https://eepro.naaee.org/resources/jedia
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- Mapuche perspectives from Kütralkura UNESCO Global Geopark in Chile: https://www.unesco.org/en/articles/mapuche-perspectives-kutralkura-unesco-global-geopark-chile
- Legends save lives: why local wisdom matters for people and planet: https://www.unesco.org/en/articles/legends-save-lives-why-local-wisdom-matters-people-and-planet
- Multilingual education, the best to preserve indigenous languages and justice: https://www.unesco.org/en/articles/multilingual-education-bet-preserve-indigenous-languages-and-justice
- Climate Science Literacy Workshop: Climate Change Knowledge in Local Languages: https://www.unesco.org/en/articles/climate-science-literacy-workshop-climate-change-knowledge-local-languages

Websites

- Inclusive Learning Activities: https://teachingcommons.stanford.edu/teaching-guides/inclusive-teaching-guide/inclusive-learning-activities
- Knowledge and practices concerning nature and the universe: https://ich.unesco.org/en/knowledge-concerning-nature-00056
- Forest School for All – Promoting Inclusivity and Diversity in Nature Education: https://www.yourthurrock.com/2023/12/22/forest-school-for-all-promoting-inclusivity-and-diversity-in-nature-education/
- Recovering Voices: https://naturalhistory.si.edu/research/anthropology/programs/recovering-voices

Observation and research activities

Engaging in observation and research activities in UNESCO sites offers many opportunities for learning, such as observing and identifying different animal species in their natural habitats; learning to identify and follow animal tracks and signs; participating in classes about ecosystems and environmental science; exploring different plant species and learning about their uses and characteristics; searching for interesting shells, rocks and marine life; or simply immersing yourself in nature while observing flora and fauna.

These activities not only enhance our observation skills but also deepen our appreciation for the natural world.

Activity – Biosphere adventure trails

Purpose: Develop educational trails within biosphere reserves integrating interactive signage, indigenous languages, QR codes, and hands-on activities to facilitate exploration and learning about unique ecosystems and sustainable practices.

How it works: These trails should be designed with input from local experts and stakeholders to ensure accuracy and cultural relevance, and provide an overview of the unique biodiversity of the site.

An example of this was developed by the Entlebuch Biosphere Reserve (Switzerland) in their Fun and Adventure 2022 Activities Guide, which includes, for example, the Sundew Path which is a colourful circuit with butterflies, dragonflies and pretty orchids and a blueberry-filled upland moor forest with gnarled mountain. Seventeen activity stations dotted along the path feature information and entertaining games.

At the Mooraculum in Sörenberg, you can go on a 'researchers' tour' for all the family and the 17 interactive activity stations explain the unique flora and fauna and their amazing survival strategies.

Prominent moorland residents tell their own personal stories on moorland telephones which are powered by manual crank handles. The explorer experience is made even more exciting by having your own explorer's box, which contains a manual, acid test strips, compass, magnifying glass and measuring tape.

Activity – Citizen science projects

Purpose: Engage learners in citizen science projects within biosphere reserves to deepen their understanding of environmental issues and promote active participation in conservation efforts.

How it works: Projects can include monitoring wildlife populations, tracking climate data or assessing water quality, providing students with real-world research experience and a sense of ownership over local ecosystems. In addition, citizen science projects, where volunteers assist in underwater surveys or artifact documentation, can involve the whole community in heritage preservation.

The project Mangrove restoration as a nature-based solution in biosphere reserves in Latin America and the Caribbean (MangRes Project) aims to carry out an assessment of the state of mangrove ecosystems and their restoration potential, as well as to implement restoration campaigns using local knowledge and science. Students take part in the project by helping with restoration and conservation which makes them aware of the essential role played by mangroves to capture and store carbon, their contribution to coastal protection, to resilience and to the sustainment of critical habitats for biodiversity.

Cape Winelands Biosphere Reserve (South Africa), supported by extensive field training of youth in the use of equipment for measuring indicators for water quality (dissolved oxygen, presence of aquatic species, pH, temperature, salinity and turbidity and streamflow), ensures the transfer of scientific methodology to youth participants without a background in water science. Moreover, youth continue to be involved in the development and training of a mobile app sharing platform for community data collected in these landscapes.

Some other ongoing examples include the Low-tech Lab, which, by leveraging a citizens' science approach, actively engages students and educators in activities within UNESCO's biosphere reserves in a meaningful and impactful way.

Activity – Water mappings

Purpose: Mapping helps to identify the locations of buildings, roads, water sources, health facilities, and other essential infrastructure. Mapping using satellite images also helps to monitor the situation and improve vital services. By mapping vulnerable areas that are affected by climate change, one can help local governments, communities and organizations provide better emergency assistance.

How it works: This water resources mapping activity offers the opportunity to explore the spatial and temporal evolution of water supply, key water resources, and water infrastructures in UNESCO sites. It helps discover how the collection, preservation, supply and use of water deeply influences communities' history, culture and development.

An example of water mapping comes from the WaterMap of the City of Ahmedabad, India, a World Heritage city, in the form of a case study and discussion.

The Small Islands Developing States Mapathon, in cooperation with the Red Cross, invites volunteers from all over the world to join in this effort to map areas based on satellite images.

Activity – Resilient Reefs Initiative

Purpose: The Resilient Reefs Initiative is a global partnership supporting UNESCO World Heritage-listed coral reefs, and the communities that depend on them, to adapt to climate change by reducing local threats. This initiative harnesses and connects global resources to boost local knowledge, skills, partnerships, political will, and overall capacity for designing and implementing resilience projects, as well as institutionalizing resilience-based management practices.

How it works: Initiated by the Great Barrier Reef Foundation and supported by the BHP Foundation, the Resilient Reefs Initiative is a collaboration between UNESCO, The Nature Conservancy's Reef Resilience Network, the Center for Resilient Cities and Landscapes at Columbia University, the Resilient Cities Catalyst and AECOM. Over six years, with an investment of US$10.5 million, the initiative has developed resilience strategies at four pilot UNESCO World Heritage sites in Australia, Belize, France and Palau. Key resilience-based projects have been funded and initiated at these sites to kickstart on-the-ground outcomes. These projects include activities focused on enhancing community engagement with the World Heritage sites, such as educational programmes for youth.

For instance, in July 2021, the Initiative supported a three-day event on sustainable turtle management in the Lagoons of New Caledonia: Reef Diversity and Associated Ecosystems World Heritage site (France), featuring dedicated learning sessions on the ecological importance of turtles with local schoolchildren.

Similarly, at the Belize Barrier Reef Reserve System World Heritage site, a week-long workshop was held to explore creative solutions to the challenges posed by rapid coastal development in Belize. This event involved local university students and key stakeholders.

Activity – Environmental DNA Expeditions

Purpose: UNESCO's Environmental DNA (eDNA) Expeditions is a global citizen science initiative that helps measure marine biodiversity and assesses the impact of climate change on marine life distribution across UNESCO World Heritage marine sites.

How it works: eDNA sampling campaigns are carried out in different sites. Individual stories of the citizen science sampling campaigns from each site are available on the project page. The project is a joint collaboration between the Intergovernmental Oceanographic Commission and the World Heritage Centre supported by the Government of Flanders (Belgium).

Between September 2022 and April 2023, eDNA sampling campaigns were carried out at 21 of these sites. The campaigns provided a biodiversity snapshot focusing on fish and large marine vertebrates, many of which are listed on the IUCN Red List of Threatened Species.

Over 400 eDNA samples were collected by 250 citizen scientists, primarily local school students and children. This participation not only enhanced their personal learning and scientific awareness but also fostered a sense of pride and commitment towards conserving UNESCO World Heritage marine sites which should bring strong impetus to their conservation for future generations.

Eleven eco-school students travelled to the remote Aldabra Atoll (Seychelles) for a week of intense educational activities, including the collection of environmental DNA samples as part of the global eDNA expeditions.

Further resources:

Publications/articles

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Websites

- Environmental DNA Expeditions in UNESCO World Heritage Marine Sites: https://www.unesco.org/en/edna-expeditions
- CyberTracker: https://cybertracker.org/

Videos/multimedia

- UNESCO eDNA expeditions in marine World Heritage Sites. Introduction and testimonials (video): https://www.youtube.com/watch?v=OGZKZ_VWifk

Restoration and capacity-building activities

There has never been a more urgent need for ecosystem restoration. Governments and communities all across the world have decided it is time to stop ecosystem degradation and begin restoration.

Ecosystem restoration is defined by the United Nations Environment Programme (UNEP) as, '*the process of halting and reversing degradation, resulting in improved ecosystem services and recovered biodiversity. Ecosystem restoration encompasses a wide variety of practices, depending on local conditions and societal choice*', (UNEP, 2021). What this means is that the strategy to allow ecosystems to recover depends on you, your community and the global community's choices and actions taken to ensure a healthy natural world. Actions must result in a net positive for biodiversity and improved ecosystem services.

Restoration activities can include planting a diverse suite of native species chosen to survive in future climates and to provide food and cover for wildlife. Learners can also remove invasive, non-native plant species.

Activity – Community engagement projects

Purpose: collaborating with individuals, groups, or communities to address issues, solve problems, and make decisions that affect them, by direct involvement of local populations in all aspects of decision-making, policy development and implementation to strengthen local ownership, capacities and community structures.

How it works: Partner with local communities address sustainability challenges such as tree planting and habitat restoration projects to instill a sense of stewardship and connection to the environment, fostering collaboration and collective action.

As a reference, UNESCO and Lukenya University's 10 Million Tree Marathon planted 10,000 trees in the Amboseli Biosphere Reserve (Kenya). The marathon hosted a series of activities that included 10km and 5km runs and a 100km cycling challenge. After completing their runs, participants engaged in tree planting, not only advancing towards a greener future but also embodying the spirit of collective action and global citizenship. To complement the tree planting, the marathon featured educational workshops on environmental conservation, sustainable living practices, and the importance of biodiversity conservation. These workshops aimed to raise awareness and equip participants, community members, and volunteers with essential knowledge and skills to champion ongoing environmental protection efforts.

In Matšeng Biosphere Reserve (Lesotho), a medicinal and botanical garden has been established by planting indigenous medical plants and developing learning materials in the local language. Learners can visit the botanical garden and learn more about the practices of local Indigenous Peoples.

A Climate Education Toolkit for the Nilgiri Biosphere Reserve (India), 'Murmur of the Mountains', was developed as a comprehensive learning toolkit with the aim to educate schoolchildren about climate change and inspire them to take action in their local communities. It is a handy physical box with resources in the form of posters, flash cards, games, quizzes, movies, and hands-on activities to be used as resource materials by climate educators/teachers or community resource persons to kindle the discourse on climate. The toolkit concept evolved from field experiences and lessons learned alongside communities living here.

UNESCO, with the approval of local authorities and in close collaboration with local communities, conducted activities aiming to engage communities and raise awareness on the sustainable use of natural water resources in the Socotra Archipelago (Yemen), both a biosphere reserve and a World Heritage site. The activities engaged youth and local communities by assessing and discussing visions on water sustainability. In 2021, about 160 inhabitants of Socotra Island were directly involved in education and awareness activities.

Activity – Youth innovation and leadership through competitions and capacity-building programmes

Purpose: UNESCO Water Museums and Ecohydrology Demonstration Sites play a crucial role in engaging young people through competitions and capacity-building programmes, providing them with the knowledge, skills, and opportunities to become future leaders in water management and environmental sustainability.

How it works: The combination of competitions and capacity-building programmes results in a dynamic and effective approach to youth engagement.

Competitions like the UNESCO Water Resilience Challenge (UWRC) are designed to stimulate innovative thinking and problem-solving among youth. These competitions provide a structured platform for young people to propose and develop creative solutions to pressing water and environmental challenges. Participants are encouraged to form teams, brainstorm ideas, and submit their proposals for review.

In the UWRC, the selected teams participated in comprehensive training sessions and workshops. They received mentorship from international and local experts, field practitioners, and local community leaders. These sessions provided valuable insights into water resilience strategies and helped the teams develop their ideas into actionable plans. The mentorship aspect was particularly important, as it offered personalized guidance and support, enabling the young participants to overcome challenges and refine their solutions.

Activity – E-learning curricula for young learners on 'Climate Change and World Heritage Protection'

Purpose: The unique challenges, experiences and local adaptation and mitigation measures of World Heritage properties are vivid resources to motivate young learners to investigate the causes and impacts of climate change and to actively participate in combating climate change and protecting our shared heritage.

How it works: The initiative 'E-learning for World Heritage and Climate Protection: Innovative Education for All' is crafted to enhance the awareness, knowledge and skills of school students aged 9 to 16 to address climate change and protect the world's cultural and natural heritage. It is designed to transfer the knowledge embedded in World Heritage properties into climate change education and engage younger generations in an interactive, self-paced learning experience aligned with ESD principles.

This E-learning project showcases a synergetic development between UNESCO World Heritage and ESD, offering a meaningful and impactful educational approach. It was developed by Heritage & Education gGmbH in partnership with the UNESCO World Heritage Centre and funded by the German Federal Environmental Foundation (DBU). Upon request, different E-learning modules are accessible via: https://heritage-and-education.de/

Activity – Educational visits

Purpose: Educational visits, or field trips, enhance student learning by providing hands-on experiences and promoting a deeper understanding of classroom concepts. Educational visits enrich the curriculum and offer students diverse learning opportunities.

How it works: Throughout the year school groups can visit UNESCO sites as part of their curricular activities. During these visits the site becomes an outdoor classroom and this direct contact with the natural world enriches the learning experience for many students.

School groups from both Mahé and Praslin visit the Vallée de Mai Nature Reserve (Seychelles) as part of the educational programme. These visits include a guided tour of the Vallée de Mai forest and provide an excellent opportunity for students to learn about the ecological and biological processes of this unique palm forest. For more information, read https://whc.unesco.org/en/news/2670/

An annual trip to Aldabra Atoll (Seychelles) is sponsored for the winners of the national Eco-School award run by the Ministry of Education. Throughout the year each school undertakes a variety of environmental activities at their school and is awarded points for each one. The schools with the highest number of points win the Eco-School award. They are rewarded with a visit for some of their pupils and teachers to Aldabra, where they can learn more about the Seychelles' environment and be inspired to protect it in the future.

Activity – Exhibitions for sustainable development

Purpose: Foster better understanding of environmental and sustainable development issues among students and visitors.

How it works: By installing exhibitions near information centres and in UNESCO sites, including exhibitions of amazing sculptures made from waste materials, or ancient sculptures and artifacts that have rich historical and cultural signification.

A 'Climate Science Literacy' exhibition of 27 banners, including one each about the impact of climate change on the 17 SDGs, was produced by professional geographers with support from United Nations staff and design specialists. Due to the interconnectedness and cross-cutting nature of the exhibition' content, none of the infographics can be viewed in isolation as they only provide a good overview, from a range of perspectives, of the complexity of climate change, as well as its causes and effects, when seen together.

The Yaku Parque Museo del Agua (Ecuador) is an interactive museum dedicated to one topic: water at its most complex and diverse and in a startingly array of scenarios and forms; from science to art, passing through environmental, social, spiritual and historical topics among others. The museum believes that the only way to protect water in a conscious way is by having a strong affective attachment to it. From an interdisciplinary fabric of technical and social scientists, artists, builders, guardians of the environment, space planners, and inhabitants of various neighborhoods of Quito, an exhibition has been created that allows visitors to observe the treasures hidden behind the creeks of the city from different points of view. Water has sculpted the geography of the city, and understanding the impacts that its behaviour have on the lives of Quito residents is essential to begin building a conscious and proactive relationship in the face of risks that may exist, as well as protecting and benefiting from its advantages.

Further resources:

Publications/articles

- UNESCO, 2021. *Trash hack action learning for sustainable development: a teacher's guide*. Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000375408.locale=en
- Classroom materials about climate action and biodiversity conservation: https://www.international-climate-initiative.com/en/topics/learning-packs/
- Federal Agency for Nature Conservation, 2024. *Meaningful engagement in nature restoration at the local level*. Bonn, Federal Agency for Nature Conservation. https://www.bfn.de/sites/default/files/2024-08/Meaningful%20engagement%20in%20nature%20restauration.pdf
- IOC-UNESCO, 2022. *State-of-the-art of ocean literacy*. UNESCO, Paris. https://unesdoc.unesco.org/ark:/48223/pf0000382663.locale=en
- F. Santoro et al. (eds), 2018. *Ocean literacy for all: a toolkit*. Paris, IOC/UNESCO and Venice, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000260721.locale=en
- IOC-UNESCO. 2022. *A new blue curriculum: a toolkit for policy-makers*. Paris, IOC/UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000380544.locale=en
- See how ancient Indigenous artists left their mark on the landscape: https://www.nationalgeographic.com/premium/article/ancient-murals-indigenous-artists
- How a school in Colombia is teaching learners to preserve mangroves: https://www.unesco.org/en/articles/how-school-colombia-teaching-learners-preserve-mangroves
- World Earth Day Nature Education - Protecting Our Earth, Panda Ambassadors in Action: https://www.unesco.org/en/articles/202024-world-earth-day-nature-education-protecting-our-earth-panda-ambassadors-action
- Young Journalists Leading the Shift: Prioritizing Causes in Climate Reporting: https://www.unesco.org/en/articles/young-journalists-leading-shift-prioritizing-causes-climate-reporting

Websites

- UNESCO Trash Hack: https://www.trashhack.org/
- 2024 World Environment Day practical guide - We are #GenerationRestoration: https://wedocs.unep.org/bitstream/handle/20.500.11822/45440/practical_guide_WED_2024.pdf

Videos/multimedia

- Fishermen, Guardians of the Sea: Uncover the story of Houssine Nibani, earth life science professor: https://www.unesco.org/en/articles/fishermen-guardians-sea-uncover-story-houssine-nibani-earth-life-science-professor

Cultural and creative activities

By connecting local with global and fostering dialogue among cultures and generations, cultural, creative and arts activities can contribute to peaceful, just, inclusive and sustainable societies. They offer ways of reimagining living harmoniously with the earth and preserving social cohesion and addressing environmental crises.

Activity – Youth engagement through creative contests

Purpose: To implement youth-oriented contests within UNESCO Water Museums and Ecohydrology Demonstration Sites to engage young people in creatively exploring and narrating the importance of water heritage, both natural and cultural. These contests aim to change mindsets, inspire respectful behaviours towards nature, and promote sustainable water use practices.

How it works: By inviting participants to creatively explore the importance of water heritage – natural and cultural, tangible and intangible – the contest encourages youth to consider how we can change mindsets and inspire behaviours that respect nature and promote sustainable water use.

The youth prize contest The Water We Want is designed to engage young people as narrators of our multifaceted water heritage and storytellers of more sustainable water futures. Through submissions from schools, learning institutions, and civil society organizations worldwide, the contest fosters a global dialogue on protecting our scarce water resources and learning from inherited water legacies to find new solutions for a greener future. Entries are submitted through the Global Network of Water Museums, ensuring a wide and impactful reach.

Activity – Linking schools among UNESCO sites

Purpose: To promote awareness of this UNESCO site within the educational community, the Argentine National Commission for Cooperation with UNESCO incorporated secondary schools into the ASPnet near sections of the Qhapaq Ñan. This initiative allowed young people to visit the site, learn about its significance, and express their opinions on the challenges of preserving local heritage.

How it works: Argentina, Bolivia, Chile, Colombia, Ecuador and Peru together form a site of exceptional universal value: the Qhapaq Ñan, Andean Road System. This system, which was the backbone of the political and economic power of the Inca Empire, stands as an example of original and innovative regional cooperation in its inclusion on the World Heritage List.

In collaboration with site managers, site visits were facilitated to promote conservation and sustainable development. Additionally, regional exchanges with schools from other countries along the Qhapaq Ñan were explored, enhancing the understanding and preservation of cultural heritage.

Students and teachers participated in training sessions based on UNESCO's 'World Heritage in Young Hands' programme, which fostered knowledge and appreciation of local heritage, and instilled in young people a sense of responsibility to protect it. Various activities encouraged the active participation of students, teachers and the educational community in the protection of cultural and natural heritage.

- Patrimonio mundial en Argentina: Qhapaq Ñan según los jóvenes: https://www.educ.ar/recursos/158461/patrimonio-mundial-en-argentina-qn-segun-los-jovenes (Spanish)
- Colección Patrimonio Mundial en Argentina: https://www.educ.ar/recursos/158552/el-patrimonio-mundial-en-la-argentina (Spanish)

Activity – Training activities guide

Purpose: To use training as a method of engagement with Geoparks and geotourism, in order to share geological knowledge in a compelling way – knowledge about the forces that shape our world and that increases our understanding of our landscapes and cultures.

How it works: The report Training Activities in Geoparks: A guide to using training as a method of engagement with Geoparks and Geotourism provides guidance and insights into the types of training activities that can be conducted within Geoparks, including case studies and practical recommendations for planning and implementing training programmes that promote sustainable development and environmental conservation.

Case Study 4: Geotourism, art, and education in the Burren and Cliffs of Moher UNESCO Global Geopark (Ireland), is a great example of activities that can be organized. The Geopark team initiated a project involving a local artist collaborating with secondary school students. The objective was to develop a piece of art based on the concept of Geoparks and Geotourism, aimed at raising awareness among the younger generation about the significance of their landscape and the importance of sustainable development.

Through this engagement, the team aimed to foster a learning environment that encourages discussions on landscape preservation, environmental conservation, geotourism, local life, and the role of art as a means of documenting and commemorating cultural and natural heritage.

Activity – Young climate action for World Heritage

Purpose: Dealing with SDGs 4, 11 and 13, students outline the significance of World Heritage Sites and their threat from climate change in a creative and action-oriented way. The project positions World Heritage Sites as learning places within the framework of ESD and strengthens the cooperation between schools and the participating World Heritage Sites.

How it works: Young Climate Action for World Heritage combines World Heritage Education with the Agenda 2030 and ESD. It is an international educational project of the Institute Heritage Studies in cooperation with the German Commission for UNESCO, funded by the German Federal Environmental Foundation and the participating sites. It involves ASPnet schools from Czechia, Denmark, Germany, Netherlands and Poland.

The cross-border cooperation of young people at the participating World Heritage Sites takes into account that climate protection requires joint international action. A basic principle of ESD – think globally, act locally – can thus be experienced in practice at World Heritage Sites.

During one school year, the students dealt with the following questions: What does our common heritage mean to us? To what extent is it threatened by climate change or does it help to mitigate it? And, most importantly, how can we take responsibility for the preservation of the World Heritage Site and combat climate change locally?

The students develop inspiring learning products in the fields of arts, media, games and quizzes, research and sustainable joint actions that show their motivation to become active for World Heritage and climate protection: https://heritagestudies.eu/youngclimateaction/en/success-and-results/

Activity – Language, culture and arts: ocean and seafaring

Purpose: To analyze historical documents, maritime literature, and oral traditions related to seafaring cultures and ocean exploration.

How it works: Participants examine maritime art, architecture, and cultural expressions found in UNESCO maritime sites, such as shipwreck artifacts, and submerged settlements and engage in the creation of art, poetry, or music as a method of cultural exchange.

Many populations venerate the ocean and water. Look at the offerings that Nordic people sacrificed to the gods in the Danish bogs as exhibited in the Danish National Museum. Compare this to today's ocean veneration in the Pacific, for instance in Hawaii's fish traps.

The Canoe is the People project promotes Pacific indigenous knowledge of the ocean environment including traditional open ocean wayfaring. Through audiovisual documentation with master navigators and canoe builders, as well as online animations, images and texts, the project offers a vehicle for elders and experts from several Pacific countries to transmit their specialised knowledge, skills and worldviews to Pacific youth.

Further resources:

Publications/articles

- UNESCO, 2015. *Intangible cultural heritage and sustainable development*. Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000243402.locale=en

- Living Heritage and Education: https://ich.unesco.org/doc/src/46212-EN.pdf
- Safeguarding intangible cultural heritage in formal and non-formal education programme: https://ich.unesco.org/en/education-01017
- UNESCO clearinghouse on living heritage and education: https://ich.unesco.org/en/clearinghouse-education
- UNESCO, International Information and Networking Centre for Intangible Cultural Heritage and Asia-Pacific Centre of Education for International Understanding, 2022. *Bringing living heritage to the classroom in Asia-Pacific: a resource kit*. Bangkok, UNESCO, Jeonju, ICHCAP and Seoul, APCEIU. https://unesdoc.unesco.org/ark:/48223/pf0000383135.locale=en
- UNESCO and International Information and Networking Centre for Intangible Cultural Heritage, 2021. *Teaching and learning with and about intangible cultural heritage in Asia and the Pacific: survey report*. Paris, UNESCO and Jeonju, ICHCAP. https://unesdoc.unesco.org/ark:/48223/pf0000375485.locale=en
- UNESCO, 2015. *Learning with intangible heritage for a sustainable future: guidelines for educators in the Asia-Pacific region*. Bangkok, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000232381.locale=en
- UNESCO, 2021. *Teaching and learning with living heritage: pilot survey on the UNESCO ASPnet Schools in the European Union; summary of key findings*. Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000381481.locale=en
- UNESCO, 2021. *Teaching and learning with living heritage: a resource kit for teachers; based on the lessons learnt from a joint UNESCO-EU pilot project*. Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000381477.locale=en
- UNESCO and Canadian Commission for UNESCO, 2024. *Arts for transformative education - a guide for teachers from the UNESCO Associated Schools Network*. Paris, UNESCO and Ottawa, Canadian Commission for UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000388701.locale=en
- What you need to know about culture and arts education: https://www.unesco.org/en/articles/what-you-need-know-about-culture-and-arts-education
- How a Gambian teacher is blending sustainability education with cultural heritage: https://www.unesco.org/en/articles/how-gambian-teacher-blending-sustainability-education-cultural-heritage
- Great Zimbabwe National Monument World Heritage site: interpretation and storytelling framework: https://www.unesco.org/en/articles/great-zimbabwe-national-monument-world-heritage-site-interpretation-and-storytelling-framework
- Why do we need new narratives for the Great Zimbabwe World Heritage site? Creatives speak!: https://www.unesco.org/en/articles/why-do-we-need-new-narratives-great-zimbabwe-world-heritage-site-creatives-speak
- UNESCO empowers stakeholders to safeguard intangible cultural heritage through community-based inventory: https://www.unesco.org/en/articles/unesco-empowers-stakeholders-safeguard-intangible-cultural-heritage-through-community-based
- Heritage So Young | Youth telling stories of Quanzhou, a World Heritage city of red brick walls and ancient houses: https://www.unesco.org/en/articles/heritage-so-young-youth-telling-stories-quanzhou-world-heritage-city-red-brick-walls-and-ancient

Websites

- Working towards an African renaissance through Culture and History: https://www.unesco.org/en/working-towards-african-renaissance-through-culture-and-history
- UNESCO Silk Roads Programme: https://en.unesco.org/silkroad/
- The Fil Bleu: a thread to connect Blue Artisans in Venice and beyond: https://oceanliteracy.unesco.org/flu-bleu-blue-artisans/
- Recovering Voices: https://naturalhistory.si.edu/research/anthropology/programs/recovering-voices

Co-learning, partnership and exchange activities

UNESCO sites serve as vital observatories for climate change, gathering and disseminating information on monitoring, mitigation, and adaptation practices. They raise awareness about the impact of climate change on human societies, cultural diversity, biodiversity, and ecosystems. Additionally, they contribute to preventing the loss of biodiversity, landscapes, and significant cultural and natural sites.

UNESCO sites cooperate globally/regionally through a number of networks, most of them based on their similarities in designation. Despite their different legal, institutional and operational frameworks, UNESCO sites are all called to act as laboratories of initiatives that enhance the management and safeguarding of cultural and natural resources, while having a direct transformative impact on communities and visitors.

To enhance common objectives, knowledge-sharing and developing innovative solutions, different inter-sectoral and interdisciplinary activities are needed to bring together different kinds of UNESCO sites, to improve the experiences developed at local level in different sites, to support how they can mutually support sustainable local development within their different contexts, functions, and roles, and to provide opportunities for capacity development, networking and cooperation.

Such types of joint common activities can help explore shared challenges and opportunities together, enhance better understanding and awareness of the value of UNESCO sites, their uniqueness and cultural resources, stronger mobilization of local communities to elaborate goals and actions in favour of sustainable development, and strengthening of networks of local stakeholders and institutions, interested in the development of new projects.

Activity – Establishing a marine or terrestrial educational area

Purpose: An educational area is a small natural (marine or terrestrial) area managed in a participatory manner by the students of a primary school, middle school or high school. This enables the students to explore and manage a stretch of coastline, wetland, forest, river, urban park, etc at first hand.

How it works: Born in the Marquesas Islands in French Polynesia in 2012, this concept of a marine educational area is the fruit of the imagination of students of Vaitahu primary school (Tahuata Island). More than 1,000 schools and educational establishments are already involved in the establishment of marine or terrestrial *educational areas* in France and its Overseas Territories.

Supervised by their teachers and an environmental education structure, the students make all decisions concerning their educational area through a children's council.

The mixed marine and terrestrial educational areas established in both the Iles et Mer d'Iroise Biosphere Reserve (https://www.reserve-biosphere-iroise.fr/) and the Armorique UNESCO Global Geopark (https://www.geopark-armorique.fr/).

Activity – Encouraging youth engagement

Purpose: The idea of a youth camp is to bring together residents of different UNESCO sites aged between 15 and 18 for five days of activities and interactions.

How it works: The camp is an opportunity to work together on the UNESCO site and promote engagement by reflecting as a multicultural group on a desirable future for the area. At the end of the five days, the young participants propose a series of projects they want to pursue. The camp could also explore how to provide support for those who continue projects at the end of the five days via mentorship opportunities, grant writing support, etc.

The MAB UNESCO Youth Camp in the Mont Viso Transboundary Biosphere Reserve is an initiative that brings together young people from France and Italy to engage with key local sustainable development issues and the management of the transboundary site.

Activity – Elaborating joint inter-site activities

Purpose: To foster greater collaboration between UNESCO sites, developing joint activities offers opportunities for exchange and pulling resources together. This offers those visiting them to discover more about what these sites mean in an experiential way.

How it works: In order to encourage educational trips and exchanges between students and people living in these territories, local/regional governments can allocate specific funding for schools, to support travel expenses. This type of activity could be developed to promote educational trips to UNESCO sites for primary to secondary level schools, from the surrounding areas, which could also be extended to schools from other countries.

In Italy, the 3 biosphere reserves of Appennino Tosco-Emiliano, Po Grande and Po Delta, supported by the Emilia-Romagna Regional Government, have elaborated a catalogue, called 'School&Biosphere', of what they offer as a support to ESD for any school interested to visit these territories, from inside,

outside and from abroad. The catalogue is the results of interactions of the different stakeholders involved in environmental and sustainability education in the three reserves.

The 'experiences' catalogued are numerous and diversified, to enable students to discover the value of biosphere reserves in 360 degrees including:

- guided visits to nature sites, archeological sites and museums/monuments
- educational workshops
- meeting with experts
- in-depth studies of local projects and initiatives contributing to sustainable development

A first catalogue of various experiences for primary and secondary level schools, including didactic and organizational information, has been produced and made available on the web at: https://ambiente.regione.emilia-romagna.it/it/parchi-natura2000/aree-protette/riconoscimenti-unesco/programma-mab/scuola-biosfera (in Italian)

The UK National Commission for UNESCO is developing a resilient network for UNESCO Sites in the UK through its 'Local to Global' project. UNESCO Sites are a bridge from local to global action, and developing a network to cross-pollinate knowledge, resources and ideas as widely as possible, can help strength cooperation and joint actions.

Activity – Nature and heritage interpretation

Purpose: Nature and heritage interpretation functions through increasing positive experiences in nature. Through the process, participants' own reflections should be stimulated to impact their attitudes and/or behaviours. This can be done through education days, workshops, tests and educational programmes in the sites.

How it works: Nature interpretation is a creative form of connecting people with the surrounding environment by increasing knowledge about it and evoking feelings for it. Ultimately, individuals should be able to develop a personal relationship with their surrounding environment.

Nature and heritage interpreters are active in places such as government authorities, visitor centres, tourism companies, museums and non-profit organizations. They help visitors and participants in activities develop their own personal relationships with nature and cultural landscapes. They can also create a dialogue with participants about how they can be managed in a sustainable way for the future.

The CULTIVATE project (EU-project) seeks to understand the role of cultural heritage in shaping sustainable landscapes and communities in the context of societal challenges such as climate change and transitions required to meet the SDGs. Using biosphere reserves in Scotland, Norway, the Czech Republic and Estonia as demonstration regions, this research explores how cultural narratives are co-created, contested and negotiated at community, regional and national levels using methods that bring to the fore cultural values, identity and relationships between people and land. These cultural narratives are reshaped using the 'Seeds of a Good Anthropocene' methodology which focuses on using inspirational visions and stories to achieve transformations to sustainability.

Member of the Global Network of Water Museums, Victoria Museums, Bunjilaka Aboriginal Cultural Centre (Australia) produced a First Peoples learning kit which contains a collection of objects and materials that reflect the unique material culture, practices and stories of First Peoples from around south-eastern Australia. Students consider a variety of themes through the examination of objects and written materials to develop an understanding of, and respect for, the histories and wisdom of First Peoples.

At San Antonio Missions World Heritage Site (USA), the Education Program offers a variety of resources and experiences for students and educators, including scavenger hunt materials for teachers and educators to be able to take their students through the park with a colorful, informational, and fun activity. Answers are discovered as the group walks through the grounds of these historical structures, reading signage, exploring the rooms, and using critical thinking skills to conjure the life that existed here more than 300 years ago. Children can also explore the outstanding universal values of San Antonio Missions and reflect on their own outstanding values, through the San Antonio Missions World Heritage Junior Ranger Program.

Activity – World Heritage Volunteers Initiative (WHV) – working on the future

Purpose: The World Heritage Volunteers Initiative encourages youth organizations and institutions to undertake action camps at World Heritage sites, in cooperation with multiple stakeholders and partners. It mobilizes a growing number of national and international volunteers as well as local communities through concrete activities and awareness-raising campaigns for the protection and preservation of our common cultural and natural heritage and to address local and global challenges.

How it works: The action camps allow young volunteers to increase their knowledge, skills, non-formal education, extend their networks and gain experience in hands-on basic preservation and conservation techniques, while contributing to local communities and overall heritage conservation. In addition, they also positively influence young volunteers' personal development, resulting in profound and long-lasting impacts on a personal, societal and heritage level.

WHV is a UNESCO initiative jointly launched with the Coordinating Committee for International Voluntary Service in 2008, implemented with the global coordinator Better World. Since 2008, over 10,000 volunteers have participated in awareness-raising and hands-on activities through 647 action camps. Today, a growing number of young people, NGOs, local communities and authorities are involved in protecting and preserving World Heritage, with projects implemented by 191 organizations and completed in 81 countries at 226 World Heritage properties and sites on the Tentative List, bringing together national and international volunteers.

African Rift Valley – Masaai Mara (Kenya): Volunteers took part in the construction of Manyattas (Maasai houses), learning traditional building methods and discussing with the local communities on wildlife preservation and protection. They joined the educational nature walk and biodiversity monitoring activity to discover animal paths, breeding points, and wildlife behaviour and facilitated awareness-raising programmes on heritage preservation and promotion at schools.

Forêt Atsinana (Madagascar): Volunteers participated in awareness-raising, education and communication activities on World Heritage and climate change at the local community level. They contributed to the dissemination of alternative reforestation and agro-ecology techniques based on site protection and community resilience.

Island of Mozambique (Mozambique): With the facilitation of volunteers, the project provided training to participants, preparation of about 4000 mangrove plants seedlings to be planted around the areas affected by erosion, and the creation of a youth mobilisation group in the affected area.

Further resources:

Publications/articles

- TESF Collective, 2023. *Knowledge Co-creation in Action: Learning from the Transforming Education for Sustainable Futures Network. A methodological sourcebook*. Bristol, TESF. https://zenodo.org/records/10179676/files/TESF_Knowledge%20Co-creation%20in%20Action_13March24_sml.pdf
- UNESCO, 2019. *The role of visitor centres in UNESCO designated sites: report of the first regional workshop for Europe (30 September-2 October 2018, Palermo, Italy)*. Venice, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000369983.locale=en
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- Swedish Centre for Nature Interpretation, 2017. *Landscape Dialogues—a guide*. Uppsala, SCNI. https://www.slu.se/globalassets/ew/org/centrb/cnv/publikationer/dialog_eng_webb.pdf
- The significance of values-driven heritage interpretation solutions for World Heritage sites: https://www.unesco.org/en/articles/significance-values-driven-heritage-interpretation-solutions-world-heritage-sites
- UNESCO, 2024. *Accelerating Carbon Neutrality: Innovative Actions for Sustainable Development*. Beijing, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000388349.locale=en
- UNESCO and INBAR's "Bamboo for Carbon Neutrality" Initiative Promotes Low Carbon Goal in China's Rural Areas: https://www.unesco.org/en/articles/unesco-and-inbars-bamboo-carbon-neutrality-initiative-promotes-low-carbon-goal-chinas-rural-areas
- World Heritage Volunteers gathered in the Maasai Mara for Heritage Conservation: https://www.unesco.org/en/articles/world-heritage-volunteers-gathered-maasai-mara-heritage-conservation

Websites

- The Biosphere Trail – explore a unique natural area: https://www.vastsverige.com/en/nature-experiences/walking/hiking-trails/the-biosphere-trail/
- UNESCO Sites in the UK: https://unesco.org.uk/our-sites
- Scotland's UNESCO Trail - Interactive Map: https://www.visitscotland.com/things-to-do/unesco-trail

V. Moving forward: key principles

> The highest education is that which does not merely give us information but makes our life in harmony with all existence.
>
> Rabindranath Tagore

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Educational activities in UNESCO sites should be designed and conducted with the following principles in mind:

- **Participation:** Active participation of stakeholders is pivotal in educational activities, ensuring engagement from all levels of society. By involving local communities, Indigenous Peoples, educators and visitors, these activities foster a sense of ownership and responsibility towards preserving natural and cultural heritage.
- **Inclusion:** Activities should build and provide an inclusive environment which addresses and responds to the diversity of needs of all learners. This involves learners of diverse genders, abilities, ethnicities, backgrounds and ages, engages with diverse perspectives, including indigenous/traditional perspectives, contributes to meaningful discussions, and can be adapted for different training and learning contexts.
- **Transversality:** Educational activities should take a transversal approach, combining various disciplines, methodologies, and societal perspectives. By addressing multifaceted challenges through collaborative efforts, these activities promote holistic learning experiences.

- **Transformation:** Activities promote transformative education and learning in support of sustainability, leading to individual and social change. They empower learners to transform themselves and the society they live in, which can mean, for example, taking action against climate change, changing one's consumption patterns, developing social entrepreneurship and sustainable livelihoods, or supporting those struggling against poverty.
- **Innovation:** Educational activities involve innovative approaches that diverge from traditional methods, allowing for a more comprehensive understanding of environmental, social and cultural dimensions. This innovation spans content development as well as the methodologies employed in activities.
- **Efficiency:** The efficiency of educational activities is measured by their ability to produce meaningful outcomes that benefit both the sites and the people involved. These initiatives aim to maximize positive impacts while minimizing negative effects on the environment and local communities.
- **Integration:** Sustainable development calls for the integration of the social, economic and environmental dimensions of development. Activities should address the three dimensions of sustainable development (society, economy, environment) in an integrated way, and help learners understand the interdependence between them and act accordingly.
- **Sustainability:** Educational activities need to emphasize long-term planning and holistic perspectives, integrating environmental, social, cultural and economic dimensions. Educational activities are designed to have lasting impacts on both the sites and the communities that inhabit them.
- **Reproducibility:** Successful education practices are designed to be reproducible and adaptable to different contexts. Clear documentation and sharing of best practices enable other sites and communities to replicate and customize educational initiatives according to their unique circumstances.

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UNESCO sites as partners for Education for Sustainable Development

An implementation guide

UNESCO's Intersectoral Programme on using *UNESCO sites as ESD learning hubs and as living labs for sustainability* promotes scientific and environmental education for sustainable and resilient societies. It aims to develop a novel approach to Education for Sustainable Development and Environmental Education with, within and among UNESCO sites, as well as inspire connection, curiosity, cooperation and a better understanding of our relationship with nature.

This guide aims to provide practical suggestions and ideas for teachers, educators and site managers on how to mobilize and collaborate with UNESCO sites, including Biosphere Reserves, World Heritage sites, and Geoparks, in order to develop practical learning activities. The overall approach is to promote sustainable climate and environmental actions, based on on-going projects in UNESCO sites around the world, and to let learners experience the reality of sustainable development in their local contexts through these sites.

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4 QUALITY EDUCATION

Sustainable Development Goals