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Discovery Trail

Systematic use of digital outdoor learning tool

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Short Guide for Educators

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Impressum

This introductory guide is based on the handbook for the project ‘Discovery Trail. Systematic use of digital outdoor learning tool’. Partners: Tallinn University, Estonia; Helsingin Yliopisto, Finland; Naturerlebnispark Science Education Center, Austria; Ellinogermaniki Agogi Scholi Panagea Savva Ae, Greece.

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Read about the project and see the full handbook: https://seemik.tlu.ee/discovery-trail-project/

We have developed guidelines for the systematic use of the digital outdoor learning tool Avastusrada to take learning about biodiversity to where it should really happen – the nature.

Discover the trail for effective biodiversity education

- Biodiversity is a vital component in our planet's health and human well-being. Its condition is rapidly worsening.
- Learning about biodiversity fosters a deeper understanding of ecosystems and biodiversity patterns, but biodiversity is a complex system, making it difficult to comprehend intuitively. Specific learning methods to support 'systemic thinking' are needed.
- Field work and outdoor learning leads to higher levels of cognitive achievement when compared to classroom instruction.
- The Avastusrada platform is a tool that allows teachers to create educational trails with tasks linked to specific outdoor locations. [add link or QR code]
- As biodiversity manifests locally and basically everywhere, opportunities for learning about biodiversity exist even in school yards or in parks.
- It is also important what kinds of questions are being asked.
- The tasks should be less about just searching for information and more a guide on how to use prior information and new information gathered with the senses to understand the concepts better.
- When learners take an active role in independently exploring connections, asking questions, and finding solutions to problems, they become aware of complex relationships.
- Such an understanding is the key mechanism to drive the appropriate behaviours.

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What are good questions?

Good questions **elicit** prior understanding, **challenge** the students to compare prior understanding with new more advanced solutions, **extend** their understanding with new knowledge, and **support** the further application process of the knowledge.

What should an educator take into account when planning questions to the Avastusrada platform?

- Think where in the learning process the trail is located. Do students already know something about the topic? What would you like to achieve with the questions?
- Create less questions, but in a way that the questions support students' deeper learning experiences.
- Use the surroundings as a part of the question. Make assignments that support students' observation, comparison, and other skills, and fewer tasks that tie attention to the mobile device.
- Add also questions that support the students' metaconceptual awareness. For example, ask them to justify why they think in a certain way and could it be also described differently.

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How to improve the learner's informed and proactive approach to the environment?

- **Engagement and motivation:** Educational activities in real-world settings make the content more relevant and meaningful and foster a deeper connection with nature. The dynamic outdoor environment can stimulate curiosity and a sense of adventure, making the learning experience more sustainable.
- **Systems-oriented thinking:** The combination of knowledge from different disciplines such as biology, ecology, geography, and environmental sciences provides a comprehensive and holistic understanding of biodiversity. Practice-orientated teaching encourages learners to think critically and solve real-world problems. They learn to analyse environmental problems, assess the impact of humans on biodiversity, and develop sustainable solutions.
- **Transformative processes:** Ethical and value-based education is necessary to help learners instil values such as respect and a sense of responsibility towards the environment and to promote ethical choices and sustainable lifestyles. By including co-operation in group activities and projects, learners work together to analyse biodiversity issues and develop sustainable solutions. The promotion of empowerment and competences aim to encourage learners to act for the conservation of biodiversity.
- **Future-oriented perspective:** Future-oriented perspectives encourage learners to think about the long-term implications of biodiversity conservation and preservation. This future-oriented

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perspective helps them to understand how important their actions today are for the well-being of future generations.

Suggestions for incorporating biodiversity into outdoor education

1. **Biodiversity monitoring**

   - Activities: Simple biodiversity surveys, e.g. counting different plant species, insects, or birds in a local park or school garden.

2. **Habitat and species conservation, management**

   - Activities: Habitat restoration projects, such as planting native species or creating insect hotels. Advanced students can participate in local conservation efforts or adopt a local habitat to monitor and manage

3. **Management of invasive species**

   - Activities: Identifying and removing invasive plant species from school grounds or local parks. Discussing the impact of invasive species on local ecosystems.

4. **Biodiversity, ecosystem services, and human livelihoods**

   - Activities: Projects that explore how ecosystems provide services like clean water, air, and pollination. Students can create presentations or reports on how biodiversity supports human life.

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5. Sustainability practices

- Activities: Projects that explore how ecosystems provide services like clean water, air, and pollination. Students can create presentations or reports on how biodiversity supports human life. Waste management, water conservation, and sustainable agriculture can be explored.

Sample questions for a trail

1. Plants are important to other organisms because they create primary organic matter and oxygen. Name another reason why plants are necessary for other living beings.
2. The biodiversity of any place includes all the living organisms that reside there. Some of this biodiversity is invisible to the naked eye. Who might these unseen organisms be?
3. Describe a food chain that definitely exists in this place.
4. Think about what other species could live in this area. Dark diversity includes species suitable for the ecosystem that are currently absent. What conditions might indicate that a species could live here?
5. Find a dead tree and examine it closely. What different types of living organisms do you find on the dead tree?

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6. What impact do car parks and other man-made surfaces have on biodiversity?

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