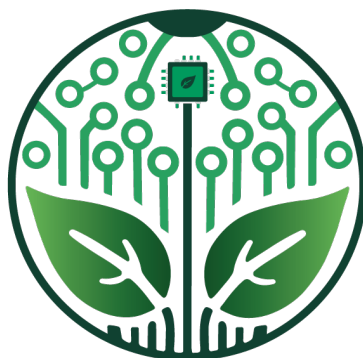




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2024-1-AT01-KA220-SCH-



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[LESSON PLAN]

[AI AND ENVIRONMENTAL ECOSYSTEMS]

 <p>QUADRAT BUNDESHANDELSAKADEMIE WOLFSBERG Austria</p>	 <p>Darica İlçe Milli Eğitim Müdürlüğü Turkey</p>	 <p>CAMPUS 02 FACHHOCHSCHULE DER WIRTSCHAFT Campus 02 Fachhochschule der Wirtschaft GmbH Austria</p>	 <p>ΔΙΕΥΘΥΝΣΗ ΔΕΥΤΕΡΙΑΣ ΕΚΠΑΙΔΕΥΣΗΣ ΚΕΦΑΛΛΙΝΙΑΣ Directorate of Secondary Education of Kefallinia Greece</p>	 <p>Jaunpiebalgas vidusskola Latvia</p>	 <p>sucessos criativos Sucessos Criativos, Lda Portugal</p>	 <p>Средно обществено-образователно училище Любен Каравелов Bulgaria</p>
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1

1. TITLE

AI AND ENVIRONMENTAL ECOSYSTEMS

2. GRADE LEVEL

- ☐ ISCED Level 3 – Upper Secondary Education (ages 15–18)

3. SUBJECT AREA

- ☐ Biology
- ☐ Environmental Studies
- ☐ Geography
- ☐ Computer Science

4. TYPE

- ☐ Lesson Plan

5. DURATION

- ☐ 1 x 40 minute class

6. LEARNING OBJECTIVES

- O1- Understand how AI can be used to monitor biodiversity and protect endangered species.
- O2- Analyze the role of AI in analyzing satellite imagery to track deforestation and climate change.
- O3- Discuss the ethical implications of deploying technology in wild ecosystems (e.g., privacy of wildlife, data bias).
- O4- Design a conceptual "AI Guardian" project for a local Bulgarian ecosystem (e.g., the Black Sea or a National Park).



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2024-1-AT01-KA220-SCH-
000248327

2

- Literacy: Presenting complex scientific ideas through structured arguments.
- STEM competence: Applying scientific observation with technological analysis.
- Digital competence: Understanding how data collection (sensors, drones) feeds AI models.
- Citizenship competence: Responsibility toward preserving national and global natural heritage.

7. Prior Knowledge / Prerequisites

Basic understanding of ecosystems and biodiversity.
Awareness of current environmental threats (pollution, habitat loss).

8. Lesson/Project Outline

Phase 1 – Introduction (Engage & Contextualize)

- Goal: To connect technology with the preservation of the natural world.
- Activities:
 - The Hook: Show 3 photos: A drone over a forest, a smart collar on a bear, and an underwater sensor. Ask: "How can these prevent the next extinction?"
 - Context: Introduce the concept of Bioacoustics (using AI to listen to the forest) and its relevance to the AI-GREENER mission.
- Output: Curiosity about non-industrial uses of AI.

Resource (name)	Link (to the folder on Teams)
Drone over a forest	https://www.zenadrone.com/wp-content/uploads/2022/10/Reforestation-and-Global-Warming-1-1-1200x675.jpg
a smart collar on a bear	https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcSosqSUMwoOBrRDce6hfnBGLYBqOp-3N87U_g&s
an underwater sensor.	https://www.mdpi.com/files/special_issues_graphic_abstract/58909/GA-edited.png



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2024-1-AT01-KA220-SCH-
000248327

3

Phase 2 – Exploration (Investigate & Compare)

- Goal: To learn about real-world AI applications in conservation.
- Activities:
 - Case Study: Briefly explain how AI tracks illegal logging in the Amazon or identifies individual animals through "facial recognition" for wildlife.
 - Comparison: Compare traditional field research (manual observation) vs. AI-enhanced research (continuous, large-scale data).
- Output: Knowledge of AI's capacity to process environmental "Big Data."

Resource (name)	Link (to the folder on Teams)

Phase 3 – Application (Hands-On Practice)

- Goal: Creative design of a local environmental AI solution.
- Activities (Group Work):
 - Task: "The AI Ecosystem Guardian". Groups choose a local Bulgarian ecosystem (e.g., Pirin Mountains, Srebarna Nature Reserve, or the Black Sea).
 - Design:
 1. What is the environmental threat? (e.g., forest fires, poaching, water pollution).
 2. What sensors will collect data? (drones, cameras, sound recorders).
 3. How will the AI help? (e.g., "AI that detects the sound of chainsaws and alerts rangers").
- Output: A poster or a pitch of the "AI Guardian" project.

Resource (name)	Link (to the folder on Teams)

Phase 4 – Reflection & Consolidation (Present & Connect)

- Goal: Connecting local action to the 2026 HUB in Graz.
- Activities:
 - Presentation: Quick sharing of the "Guardians."
 - Discussion: "Can technology truly replace human care for nature?"



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2024-1-AT01-KA220-SCH-
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4

Looking Forward: Remind students that these ecosystem solutions are key pillars of the AI-GREENER HUB and will be showcased at the final event in Graz, Austria (2026).

- Output: Integrated view of technology as a tool for environmental stewardship.

Resource (name)	Link (to the folder on Teams)

9. Assessment Criteria

1. **Ecological Accuracy:** Does the proposed AI solution address a real biological or environmental threat?
2. **Technological Understanding:** Correct use of terms like "sensors," "data," and "alerts."
3. **Collaborative Spirit:** Efficiency in group brainstorming and presenting.

Resource (name)	Link (to the folder on Teams)

10. Teaching Materials

Name	Type (Developed/Existing)	Link	Role in the lesson
Reference Map: Map of Bulgarian Protected Areas.	Existing	https://www.researchgate.net/publication/357404816/figure/fig1/AS:1106400646299648@1640797878301/Relative-share-of-protected-areas-in-the-tourism-regions.png	Phase 3



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11. External Resources and References

This section includes optional references for students who wish to explore the topic beyond the scope of the lesson.

Resource (name)	Link (external or to the folder on Teams)
Microsoft "AI for Earth" Program documentation.	https://news.microsoft.com/apac/features/ai-for-earth-helping-save-the-planet-with-data-science/
UNESCO Biodiversity and AI reports.	https://www.unesco.org/en/articles/new-report-signals-biodiversity-loss-poses-critical-risk-businesses-and-human-wellbeing
AI-GREENER Project: Guidelines for Sustainable Digital Education.	