BIODIVERSITY: THE RESCUE MISSION IN THE AMAZON RAINFOREST

Digital Educational Mat & Coding











EduMat.

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START

BIODIVERSITY: THE RESCUE MISSION IN THE AMAZON RAINFOREST

) Teaching program set-up

🗘 Scenario

This project is developed in 4 meetings of about 55 minutes each to be completed sequentially. This kit illustrates the practical indications for each activity and the related timing.

The Amazon Rainforest, a cradle of life and one of the most biodiverse regions on Earth, is facing an unprecedented crisis. From rampant deforestation to illegal poaching and water pollution, this irreplaceable ecosystem is under siege. In response, this project was born—an educational initiative that blends the magic of storytelling with critical lessons aimed to environmental conservation. Through the eyes of two adventurers, Blueparrot and Bluetoucan, this project explores the rich biodiversity of the Amazon's flora and fauna while raising awareness about the pressing threats it faces.

The story begins when Blueparrot, a blue parrot from Portugal, flies across the ocean to join his friend Bluetoucan deep in the heart of the Amazon Rainforest. Together, they embark on an exciting mission to explore the wonders of biodiversity, but they cannot do it alone – they need kids' help. Along their journey, Blueparrot and Bluetoucan witness the delicate balance of life in the rainforest, from the diverse diets of animals to the essential process of seed dispersal. However, they soon realize that the beauty they are uncovering is at risk, and they must act fast.

In this four-part lesson series, Blueparrot and Bluetoucan's adventures will serve as a framework for understanding the Amazon's fragile ecosystem and the importance of safeguarding it. With their army of "wild heroes" (including the Puma, Anaconda, and Red-Eyed Tree Frog) they rally to combat the forces of destruction: illegal poachers, deforestation, and the contamination of water sources. From battling pollution in the rivers to restoring the balance of aquatic life, their mission is both urgent and inspiring.

This project not only delves into the marvels of the Amazon's biodiversity but also emphasizes the collective responsibility to protect it. By following Blueparrot and Bluetoucan on their quest, students will learn how every species, from insects to apex predators, plays a critical role in the ecosystem. The story serves as a reminder that the fight for the Amazon is not just the animals' battle, it's ours too. Togheter, we can become the guardian of this vital rainforest and ensure its survival.

Involved subjects





ART





SCIENCE

TECHNOLOGY

Pedagogical needs	 By combining storytelling with environmental education, this project covers a wide range of pedagogical needs, including Environmental Awareness and Moral Development: Children learn the ethical importance of protecting ecosystems and wildlife; Scientific Knowledge: Key concepts such as biodiversity, ecosystems, and conservation are introduced through engaging exploration of animals and plants; Critical Thinking: Students are encouraged to think critically and propose solutions to the environmental challenges faced by the characters; Teamwork: The animals' collaboration emphasizes the value of teamwork in solving global environmental issues; Empathy and Responsibility: The project fosters empathy for wildlife and a sense of responsibility for protecting the environment; Language Development: Storytelling and activities improve reading, vocabulary, and communication skills; Curiosity: The adventure inspires curiosity about nature and encourages further exploration; Hands-on Learning: Interactive activities enhance learning and develop fine motor and cognitive skills. The pedagogical objectives of this project aim to ensure students not only gain knowledge but also develop critical life skills and a strong ethical foundation regarding environmental issues. In detail: Students will be able to identify key environmental issues affecting the Amazon and explain why biodiversity is important for the planet; Students will apply problem-solving strategies to propose solutions for environmental challenges, such as deforestation and pollution; Through group activities, students will work together, reflecting the importance of teamwork in solving global environmental problems; Students will express empathy towards nature, recognizing their role as global citizens responsible for environmental conservation;
Q Methodology	 Students will complete practical activities, such as matching games or creative projects, to reinforce their understanding of insect biodiversity and ecosystem restoration. The DEMING CYCLE (PDCA Cycle) is a method for implementing improvements continuously, test changes and solve problems.
	PLAN DO CHECK ACT 01 02 03 04

01_Plan and schedule teaching units/activities.

02_Carry out the activities (teaching units; theoretical training sessions; practical training/laboratory sessions).

03_Continuous control that the objectives are achieved and that all students have acquired new skills in a homogeneous way.

04_At the end of each session the teacher evaluates the work, observes and identifies critical issues and ways to implement corrective actions for the future.

FLORA AND FAUNA



\diamond Section of the map

This section of the map is dedicated to the first lesson. On a graphic level it presents all the elements useful for narration and related activities.



• Pedagogical objectives

The following objectives help students grasp key concepts in geography, biology, and ecology while connecting them to the context of the Amazon Rainforest and its unique ecosystem:

- Geographical Awareness: Students will be able to distinguish between different continents, specifically identifying Europe and South America, and locate the Amazon Rainforest on a map. They will also understand key geographical and environmental differences between these regions;
- Understanding Animal Diets: Students will learn about different types of animal diets (herbivores, carnivores, omnivores), with specific examples from Amazonian wildlife, gaining insights into how these diets contribute to the balance of ecosystems;
- Familiarity with Plant Life Cycles: Students will explore the life cycle of plants, focusing on processes such as seed dispersal, germination, growth, and blooming. They will learn how these stages occur naturally in the Amazon Rainforest and their importance in sustaining both plant and animal life.

> Necessary aspects

The story and its activities require:

- an educator who will actively participate during the lesson;
- a display on which to screen the map during and after reading the story and to view the videos proposed for some activities;
- a computer/tablet with which children can carry out part of the activities and programming on Scratch (a free programming environment, with a graphical programming language).

O Methodology

ATTENTION: Time of correction

A mistake in STEAM is a fundamental moment: all mistakes teach something and from them we can learn and improve together. The error must be corrected in a positive way without any penalty (reprimand, negative judgement, etc.) The correction involves the whole group in searching for the best solutions and explaining the reasons (cooperative learning – collective intelligence).

NARRATION (STEP 1) - 5 min

The educator will read the story. During the narration the map will be projected on a screen and kids will be encouraged to participate.

INTRODUCTION / DISCUSSION - 10 min

The educator will provide students with information on the subject which will be useful in subsequent activities. During the explanation the children will be involved with engaging questions.

ACTIVITY 1 / MATCHING GAME - 10 min

The class will play a matching game where they have to place the correct continent in the appropriate spot on the blank geographical map.

ACTIVITY 2 /MATCHING GAME - 10 min

Children will play another matching game by associating three animals with their food.

ACTIVITY 3 / PUT IN ORDER - 20 min

Children will play a game in which they have to put the cards relating to the life cycle of plants back in the correct order.

CODING ON SCRATCH (STEP 2) - THROUGHOUT THE LESSON

During the lesson children will do block programming on Scratch. All activities will be led by the educator.

Flora and fauna

) Step 1

The educator reads carefully the story to the children encouraging them to participate. The Blueparrot, a blue parrot from Portugal receives a letter from his Bluetucan friend who lives in the Amazon. She describes the Amazon rainforest as full of towering trees, crystal-clear rivers, and myriad colorful animals and exotic fruits.

Blueparrot wanted to see these wonders with his own eyes and decided to cross the ocean to visit Bluetoucan and her forest. But when he arrived in the Amazon, he found a very different reality from the one described in the letter...

> INTRODUCTION

After reading the story, the educator makes a brief introduction of the topic by presenting the first section of the map that will serve as a digital background on Scratch. The teacher will provide students with information about the topic: brief notes on the continents, geographical location, type of area (tropical forest) and biodiversity. The explanation will be integrated with relevant questions that will allow children to express their experiences.

ACTIVITY 1

Here the class have to place the correct continent in the appropriate spot on the map. The educator at this stage will ensure that each child completes the game, explaining again, if necessary, the geographical aspects of the theme. The educator will introduce students to key concepts by providing a brief but engaging overview of the continents, focusing on Europe and South America, and highlighting the geographic location of the Amazon Rainforest. Using a map, the educator will explain the Amazon's position within South America and its role as the world's largest tropical rainforest. The discussion will emphasize the unique biodiversity of this region, exploring the rich variety of species found in the Amazon, and their imortance to global ecosystems. Students will also learn about different types of animal diets, with specific examples of birds and other wildlife from the Amazon, such as herbivores, carnivores, and omnivores. Visual aids, including images or videos from the Internet, may be used to further enhance understanding and engagement, especially for illustrating animal diets or the diversity of the rainforest's flora and fauna.

This approach ensures that students not only understand the geographic and biological information but also make meaningful connections between ecosystems, animal behavior, and environmental conservation.

Students will engage in an interactive continent-picture matching game, where they will use Scratch to place illustrated continent cards in their correct locations on a blank geographical map. This hands-on activity is designed to reinforce their understanding of geography by helping them visually associate each continent with its correct location on the globe. The game, which was creatively illustrated as part of the project design, will encourage students to work together, promoting collaboration and deepening their understanding of global geography.

By accurately placing continents such as Europe and South America, students will better understand the geographic relationship between regions, with a focus on identifying the location of the Amazon Rainforest within South America. This fun and educational game promotes spatial awareness and geographic literacy in a visually stimulating and engaging way.

ACTIVITY 2

Here the children will test their intuition and/or previous knowledge by associating the animal with its food. Once again the educator will ensure that each child completes the game, providing the necessary information in case of difficulty Students will participate in an engaging food image matching game carried out on Scratch, where they will select the appropriate food items to match with specific Amazonian animals: a monkey, an anaconda, and a sloth. Each student will be tasked with identifying the correct diet for each animal, choosing from a set of illustrated food cards that are a part of the design project.

This hands-on activity reinforces students' understanding of different animal diets, such as herbivorous, carnivorous, and omnivorous habits, while fostering critical thinking and observation skills. The game encourages discussion about the importance of food choices in an ecosystem and helps students understand how diet influences an animal's role in the food chain.

By matching the correct food to each animal, students will gain a deeper appreciation of the biodiversity within the Amazon Rainforest, all while engaging in a fun and educational experience.

) ACTIVITY 3

In this activity, children will have to put the cards relating to the life cycle of plants back in the correct order. The educator will provide

teaching assistance if necessary.

Students will engage in an interactive plant life cycle card game on Scratch, where they will arrange some illustrations depicting the stages of a plant's life cycle in the correct order. The cards will include key phases such as seed, germination, growth, adult flower/leaf, and seed dispersal. Working individually or in small groups, students will collaborate to sequence these stages correctly, reinforcing their understanding of how plants develop and contribute to the ecosystem. This hands-on activity, illustrated as part of the project design, encourages critical thinking and strengthens their knowledge of biology by visually demonstrating the continuous and interconnected process of plant growth.

As they complete the game, students will also learn about the importance of each stage for both plant reproduction and the overall balance of the Amazon Rainforest's biodiversity.

The activity provides a fun, engaging way to visualize the plant life cycle and the critical role of plants in sustaining life within the ecosystem.

Step 2

The educator helps children to carry out the block programming code on Scratch. During this lesson the class led by the educator will use block programming on Scratch following the steps explained in the first chapter of the dedicated additional pamphlet called **MAT3.** Coding literacy for the lessons.

POACHING AND DEFORESTATION



\diamond Section of the map

This section of the map is dedicated to the second lesson. On a graphic level it presents all the elements useful for narration and related activities.



Pedagogical objectives

The following objectives aim to provide students with both a strong environmental ethic and the practical skills needed to work together to tackle complex global challenges:

- Students will be able to recognize and explain the key factors driving poaching, such as illegal wildlife trade, habitat destruction, and economic pressures, and understand the impact it has on endangered species in the Amazon;
- Students will develop a deeper understanding of the natural and human causes behind wildfires and deforestation in the Amazon Rainforest, including climate change, illegal logging, agricultural expansion, and slash-and-burn farming, while exploring their devastating effects on biodiversity and ecosystems;
- Students will be encouraged to adopt and advocate for sustainable, eco-friendly practices in their daily lives, such as reducing waste, recycling, and supporting efforts to protect forests and wildlife;
- Students will learn the key principles of effective teamwork, including communication, cooperation, and mutual respect, as they observe how animals in the story work together to overcome challenges and protect their environment.

• Necessary aspects

The story and its activities require:

- an educator who will actively participate during the lesson;
- a display on which to screen the map during and after reading the story and to view the videos proposed for some activities;
- a computer/tablet with which children can carry out part of the activities and programming on Scratch (a free programming environment, with a graphical programming language).

O Methodology

TTENTION:

Time of correction

A mistake in STEAM is a fundamental moment: all mistakes teach something and from them we can learn and improve together. The error must be corrected in a positive way without any penalty (reprimand, negative judgement, etc.) The correction involves the whole group in searching for the best solutions and explaining the reasons (cooperative learning collective intelligence).

NARRATION (STEP 1) - 5 min

The educator will read the story. During the narration the map will be projected on a screen and kids will be encouraged to participate.

INTRODUCTION /DISCUSSION - 20 min

The educator will provide students with information on the subject which will be useful in subsequent activities. During the explanation the children will be involved with engaging questions.

ACTIVITY 1 /MATCHING GAME - 10 min

The class will play a matching game in which children have to match animals and their sounds. The educator will provide the help needed.

ACTIVITY 2 /QUIZ - 20 min

Children will do a quiz about the environmental threats. The educator will provide the help needed.

CODING ON SCRATCH (STEP 2) - THROUGHOUT THE LESSON

During the lesson children will do block programming on Scratch. All activities will be led by the educator.

Poaching and deforestation

) Step 1

The educator reads carefully the story to the children encouraging them to participate. Along the way, Bluetoucan and Blueparrot saw that many trees had been cut down and in some areas there were only broken trunks and barren land.

«Blueparrot, I'm sorry you see this horror. It was all so beautiful! Unfortunately, some problems have hit my beautiful forest. Have you ever heard of poaching, deforestation and forest fires?», Bluetoucan continued with tears in her eyes and explained to her friend the causes of the ruin of the forest..

Blueparrot, however, was not discouraged: «We have to do something. If we work together, we can restore the Amazon Rainforest to its original beauty!»

They immediately began to involve the other animals of the forest. They organized teams to plant new trees, educating people about the need to protect the environment... But the problems were not over...

) INTRODUCTION

After reading the story, the educator makes a brief introduction of the topic by presenting the second section of the map that will serve as a digital background on Scratch. The teacher will explain to children what are poaching, deforestation and forest fires and why they are a problem. The educator will lead a thoughtful discussion to inform students about the harmful impact of certain human activities on the Amazon Rainforest, focusing on poaching, deforestation, and wildfires. Using real-world examples and visuals, the educator will explain how poaching endangers species by disrupting ecosystems and driving animals toward extinction, while deforestation and wildfires, often linked to human actions such as illegal logging and agricultural expansion, lead to the destruction of habitats, loss of biodiversity, and climate disruption.

This session will not only highlight the immediate consequences of these activities but also encourage students to reflect on the longterm environmental and global effects. The goal is to foster a sense of responsibility and inspire students to think about how their actions, no matter how small, can contribute to protecting nature. Engaging questions and interactive discussions will help students connect emotionally with the issues and spark critical thinking about solutions.

ACTIVITY 1

During this phase the educator will assist the children in

In this interactive activity, students will use their listening skills to recognize the sounds of various Amazonian animals, such as the monkey, toucan, and capybara. The educator will first play the distinct completing the game, ensuring that each one completes every step.

Ф АСТІVІТҮ 2

The educator will assist the children again so that each one correctly answers the questions of the quiz. This phase will be useful to explain the environmental threats that afflict the Amazon rainforest sounds these animals make, helping students become familiar with the unique calls and noises associated with each species. To make the learning experience even more engaging, a fun guessing game can be created using Scratch, where students will hear a sound and choose the correct animal from a set of illustrated options. This digital component adds an interactive, game-like element to the lesson, enhancing engagement and reinforcing auditory recognition.

As students listen carefully and make their selections, they will not only improve their ability to identify animals by sound but also deepen their connection with the rich biodiversity of the Amazon.

The activity also encourages problem-solving, critical thinking, and quick decision-making, while fostering excitement about wildlife conservation in a playful and tech-friendly way.

The objective of this activity is to raise awareness about pressing environmental threats through an engaging, interactive quiz created on Scratch. The quiz will feature a series of questions related to the environmental challenges discussed in the project, such as poaching, deforestation, wildfires, and water pollution in the Amazon Rainforest. Each question will prompt students to reflect on the causes, consequences, and possible solutions to these issues, fostering a deeper understanding of how human actions impact ecosystems. By presenting the quiz in a fun, digital format, students will be motivated to test their knowledge, apply critical thinking, and engage with the subject matter in a dynamic way.

As they answer questions correctly, they'll receive instant feedback, reinforcing key environmental concepts and promoting a sense of responsibility towards nature.

This activity not only enhances learning but also encourages students to think about how they can contribute to protecting the environment in their own lives.

Step 2

The educator helps children to carry out the block programming code on Scratch. During this lesson the class led by the educator will use block programming on Scratch following the steps explained in the second chapter of the dedicated additional pamphlet called **MAT3.** Coding literacy for the lessons.

POLLUTED WATER



 \diamond Section of the map

This section of the map is dedicated to the third lesson. On a graphic level it presents all the elements useful for narration and related activities.



Pedagogical objectives

The following objectives encourage both scientific knowledge and emotional engagement, empowering students to take an active role in understanding and protecting aquatic ecosystems:

- Students will learn the key role of freshwater in supporting life within the Amazon's aquatic ecosystems;
- Students will explore the negative effects of chemical factories, water and air pollution on ecosystems and biodiversity;
- Through hands-on activities, students will learn how to clean water by removing pollutants like chemicals, plastics, and waste;
- Students will understand the stages of a fish's life cycle and the importance of clean water for their development;
- Students will be able to visually distinguish between clean and polluted water, recognizing the impact on wildlife;
- Students will draw fresh and polluted water environments to demonstrate their understanding of the ecosystem's condition;
- Express ecosystem emotions: students will creatively express the emotional and environmental states of ecosystems through art, fostering empathy for nature.

• Necessary aspects

The story and its activities require:

- an educator who will actively participate during the lesson;
- a display on which to screen the map during and after reading the story and to view the videos proposed for some activities;
- a computer/tablet with which children can carry out part of the activities and programming on Scratch (a free programming environment, with a graphical programming language);
- paper and pencils for drawings.

Methodology

ATTENTION: Time of correction

A mistake in STEAM is a fundamental moment: all mistakes teach something and from them we can learn and improve together. The error must be corrected in a positive way without any penalty (reprimand, negative judgement, etc.) The correction involves the whole group in searching for the best solutions and explaining the reasons (cooperative learning – collective intelligence).

NARRATION (STEP 1) - 5 min

The educator will read the story. During the narration the map will be projected on a screen and kids will be encouraged to participate.

INTRODUCTION / DISCUSSION - 10 min

The educator will provide students with information on the subject which will be useful in subsequent activities. During the explanation the children will be involved with engaging questions.

ACTIVITY 1 /SIMULATION - 10 min

The class will be led by the educator in a simulation of water cleaning from the different types of pollutants such as plastics, chemical and domestic waste.

ACTIVITY 2 / SIMULATION - 10 min

Children will participate in a simulation where they can follow the life cycle of fish, understanding how pollution affects their development.

ACTIVITY 3 /DRAWING - 20 min

Children will play a game in which they have to put the cards relating to the life cycle of plants back in the correct order.

CODING ON SCRATCH (STEP 2) - THROUGHOUT THE LESSON

During the lesson children will do block programming on Scratch. All activities will be led by the educator.

Polluted water

) Step 1

The educator reads carefully the story to the children encouraging them to participate. Bluetoucan was desperate: she couldn't understand how everything had changed so quickly. The rivers, which were supposed to be crystal clear, were polluted and full of waste. She showed Blueparrot a factory and they observe that chemicals are contaminating the river.

Together, they decide to remove them. As a reward for their action, they marvel at the sight of freshwater turtles gliding gracefully among the corals. But a new invader appears. Another challenge for the army to face. They are dedicated to removing debris and plastic, restoring the natural beauty and balance of the aquatic ecosystem.

They persist in their mission, now they are removing domestic waste ensuring ecological balance. They restore the fish's life cycle aware of the importance of water purity for the fish's life cycle.

Blueparrot and Bluetoucan stop to reflect on the impact of pollution, identifying the contrast between pure water and polluted water, as a reminder for responsibility.

) INTRODUCTION

After reading the story, the educator makes a brief introduction of the topic by presenting the third section of the map that will serve as a digital background on Scratch. The teacher will informs students about the factory negative aspects for water, the aquatic ecosystem and the air. Furthermore, the educator will explain how each one can stop this problem. The educator will lead an insightful session, informing students about the negative impacts of factories on water, air, and the aquatic ecosystem. Through engaging visuals and real-world examples, the educator will explain how industrial waste and chemicals contaminate water sources, disrupt the delicate balance of aquatic life, and contribute to air pollution. Students will learn about the ripple effects of pollution on the health of ecosystems, including the depletion of freshwater, harm to fish and other wildlife, and the overall decline in biodiversity.

Building on this, the educator will discuss the roles of individuals, communities, governments, and industries in preventing and reducing pollution. They will explain how sustainable practices, regulations, environmental activism, and technological innovations, like waste treatment and clean energy solutions, can help stop pollution. This discussion will empower students to understand that both collective and individual actions are crucial in tackling environmental problems and protecting natural resources. Through interactive questions, students will be encouraged to brainstorm solutions and think about their own potential role in making a positive impact.

ACTIVITY 1

During this activity the educator will guide the children through a simulation in Scratch and, step by step, will explain the importance of cleaning the water from plastics, chemicals and domestic waste. Students will participate in a dynamic simulation on Scratch, where they will take on the role of environmental caretakers working to clean polluted water. The simulation will present various types of pollutants, including plastics, chemicals, and domestic waste, which students must identify and remove using interactive tools. Each type of pollutant will require a different strategy for removal, teaching students about the specific processes involved in addressing different kinds of contamination. Children will be "helped" by the two characters of the story: Blueparrot and Bluetoucan.

As students progress through the simulation, they will also learn about the consequences of allowing these pollutants to remain in the water, such as the harm they cause to aquatic life and the disruption of the ecosystem. The game will reinforce key environmental concepts, showing how clean water is essential for maintaining biodiversity and supporting healthy ecosystems.

This engaging activity will not only improve their problem-solving skills but also foster a deeper understanding of how pollution can be mitigated through focused, responsible action.

Students will engage in an educational game on Scratch that introduces them to the life cycle of fish, covering stages from eggs, larvae, juveniles, to adults. In this interactive simulation, students will follow the journey of a fish from its earliest development, learning how each stage is crucial for the fish's survival and growth within the aquatic ecosystem. As they progress through the game, they will encounter various environmental challenges, particularly pollution, such as plastics, chemicals, and waste, which threaten the fish at different life stages.

The game will illustrate how pollution disrupts the fish's development—for example, how toxins in the water can prevent eggs from hatching or harm juvenile fish as they try to mature. Through interactive choices and problem-solving scenarios, students will actively work to clean the water or remove threats, helping the fish continue its life cycle. Along the way, they will gain insights into how protecting water quality is essential for maintaining healthy fish populations and supporting broader biodiversity in aquatic ecosystems. This activity not only makes learning about fish biology fun but also emphasizes the critical role clean water plays in sustaining life.

ACTIVITY 2

During this activity the educator will guide the children in a simulation on Scratch and, step by step, will explain the importance of protecting biodiversity and the ecosystem.

In this phase the children will be encouraged to express themselves creatively on the topics covered during the lesson. The educator will help everyone in case of need. In this creative activity, students will draw two contrasting environments: one depicting a healthy, freshwater ecosystem and the other illustrating a polluted ecosystem. They will use colors, imagery, and symbols to represent the differences between these two worlds. In the fresh water scene, students may show clear rivers, thriving fish, aquatic plants, and animals living in harmony, capturing the vibrancy and balance of a healthy ecosystem. In contrast, the polluted water drawing will display the effects of contaminants like plastics, chemicals, and waste, with sick or dying fish, murky water, and distressed plants and animals.

As part of the exercise, students will also be encouraged to express the feelings and emotions associated with each environment. In the healthy ecosystem, they might depict joy, peace, and balance, while in the polluted ecosystem, they can convey feelings of sadness, distress, or frustration through the expressions of animals or symbolic elements like dark colors and disrupted landscapes. This activity not only strengthens students' understanding of the impact of pollution but also fosters empathy for the environment by allowing them to visualize and emotionally connect with the consequences of human actions on natural ecosystems. Through their art, students will reflect on the importance of protecting water and the life it sustains.

Step 2

The educator helps children to carry out the block programming code on Scratch. During this lesson the class led by the educator will use block programming on Scratch following the steps explained in the third chapter of the dedicated additional pamphlet called **MAT3.** Coding literacy for the lessons.

INSECTS OF THE AMAZON



 \diamond Section of the map

This section of the map is dedicated to the fourth lesson. On a graphic level it presents all the elements useful for narration and related activities.



🗘 Pedagogical objectives

The following objectives ensure that students not only learn the biology of butterflies and insects but also appreciate the diversity and ecological importance of these creatures within the natural world.

- Gain knowledge of the butterfly life cycle: students will develop a comprehensive understanding of the entire life cycle of butterflies, from egg to larva, chrysalis, and adult butterfly, learning how each stage plays a crucial role in the species' development and survival;
- Differentiate butterfly life stages: students will be able to clearly identify and differentiate between the various phases of butterfly development, recognizing the distinct characteristics of each stage and how they contribute to the butterfly's growth and transformation;
- Learn the names of various butterfly species: students will expand their vocabulary by learning the names of several butterfly species, particularly those found in the Amazon, and will be able to identify their key traits and appearances;
- Understand unique characteristics of insects: students will acquire knowledge about the fascinating world of insects, learning the unique characteristics of various species such as ants, bees, grasshoppers, and tarantulas, and how these insects contribute to the balance of ecosystems through their behaviors and roles.

O Necessary aspects

The story and its activities require:

- an educator who will actively participate during the lesson;
- a display on which to screen the map during and after reading the story and to view the videos proposed for some activities;
- a computer/tablet with which children can carry out part of the activities and programming on Scratch (a free programming environment, with a graphical programming language);
- paper, pencils, scissors and glue.

O Methodology

ATTENTION: Time of correctio

A mistake in STEAM is a fundamental moment: all mistakes teach something and from them we can learn and improve together. The error must be corrected in a positive way without any penalty (reprimand, negative judgement, etc.) The correction involves the whole group in searching for the best solutions and explaining the reasons (cooperative learning – collective intelligence).

NARRATION (STEP 1) - 5 min

The educator will read the story. During the narration the map will be projected on a screen and kids will be encouraged to participate.

INTRODUCTION /DISCUSSION - 10 min

The educator will provide students with information on the subject which will be useful in subsequent activities. During the explanation the children will be involved with engaging questions.

ACTIVITY 1 / MATCHING GAME - 15 min

The class will play a game in which children have to match butterflies and their silhouettes. The educator will provide the help needed.

ACTIVITY 2 / PUT IN ORDER - 10 min

Children will play a game in which they have to put the cards relating to the life cycle of a butterfly in the correct order.

ACTIVITY 3 /MATCHING GAME - 10 min

For this activity children will play a game in which they have to match the images of various instcts and their corresponding names.

CODING ON SCRATCH (STEP 2) - THROUGHOUT THE LESSON

During the lesson children will do block programming on Scratch. All activities will be led by the educator.

Insects of the Amazon

) Step 1

The educator reads carefully the story to the children encouraging them to participate. Blueparrot and Bluetoucan have faced and solved the problems that affect forest. Thanks to their help, the environment turns green and is repopulated with animals. Finally insects can return to inhabit the Amazon!

They watch the insects dance and find a spider's house where they also find a tarantula. As good observers they watch butterflies' life cycle. They observe the uninterrupted work of ants and bees and the elegance of a grasshopper. It's so wonderful to see insects' biodiversity.

With the mission complete, Bluetoucan and Blueparrot reflect on the importance of insects in the lives of animals and plants. They now have to say goodbye each others.

After reading the story, the educator makes a brief introduction of the topic by presenting the fourth section of the map that will serve as a digital background on Scratch. The teacher will informs students about the key insect species of the Amazon Rainforest. In this activity, students will listen as the instructor provides detailed information on key insect species of the Amazon Rainforest, with a special focus on butterflies, as well as ants, grasshoppers, bees, and other fascinating insects. The session will introduce students to specific species, such as the vibrant **Blue Morpho Butter ly**, known for its iridescent blue wings, and the **Owl Butter ly**, which uses eye-like patterns on its wings to deter predators.

For ants, the instructor will discuss the **Leafcutter Ants**, famous for cutting leaves and carrying them to their colonies to cultivate fungus for food. Students will also learn about the **Bullet Ant**, whose painful sting has earned it a legendary status in the Amazon, and its role in defending territories and colonies.

The lesson will cover the **Giant Amazonian Grasshopper**, notable for its large size and camouflage abilities, helping it blend into the forest. The instructor will also highlight stingless bees, such as the **Tetragonisca Angustula**, which are vital pollinators in the Amazon, and the **Africanized Honeybee**, known for its aggressive defense of hives but equally important in pollination.

Through engaging stories and visuals, the instructor will emphasize how these insects contribute to the Amazon's biodiversity, whether by pollinating plants, decomposing organic material, or serving as prey and predators in the food chain. To deepen understanding, students may hear sound clips of these insects and view images, helping them visualize the ecological roles of these species in the ecosystem.

ACTIVITY 1

Here students will associate different butterflies and their silhouettes.

The educator will let each child complete the matching game, but will intervene if necessary.

ACTIVITY 2

In this activity, children will have to put the cards relating to the life cycle of a butterfly in the correct order.

The educator will provide teaching assistance if necessary.

In this activity, students will be invited to match three illustrated butterflies, featured in the design project, to their corresponding shapes. Each butterfly will be represented by both a detailed illustration and a simplified outline of its shape. Students will carefully observe the unique wing patterns, colors, and structural features of each butterfly, and then match them to the correct silhouette.

This hands-on activity will not only reinforce students' ability to identify different butterfly species based on their physical characteristics but also enhance their observation skills. By engaging with the butterflies' shapes and forms, students will deepen their appreciation for the diversity and beauty of Amazonian butterflies, all while developing a better understanding of how these insects adapt to their environment for survival, such as through camouflage or mimicry.

In this interactive activity, students will explore and learn the complete life cycle of a butterfly, from the initial egg stage to the fully developed adult butterfly. The children will be tasked with arranging cards of each life phase—egg, caterpillar, chrysalis (pupa), and adult butterfly—in the correct order.

As they work through the activity, the instructor will provide insights into what happens at each stage, such as the growth of the caterpillar as it eats and prepares for metamorphosis, the transformation within the chrysalis, and the butterfly's emergence as a fully grown adult ready to spread its wings. This step-by-step sequencing activity will deepen their understanding of the butterfly's metamorphosis, reinforcing how each stage is essential for the insect's development.

By physically engaging with the materials and organizing the life stages, children will not only develop a clear understanding of butterfly biology but also enhance their sequencing skills and attention to detail. This activity provides a fun and educational way to connect with the natural world and appreciate the incredible transformation that butterflies undergo.

In this engaging activity, students will match the names of various insects - Ant, Spider, Butterfly, Bee, and Beetle - to their corresponding images. Each insect will be shown with photos showcasing key features such as the ant's segmented body, the spider's multiple legs, the butterfly's delicate wings, the bee's fuzzy thorax, and the beetle's hard, shiny shell.

Students will carefully observe each insect's unique characteristics and match the names with the correct images, reinforcing their ability to identify insects visually. To deepen their understanding, the educator can share interesting facts about each insect's role in the ecosystem such as the ant's role in decomposing organic matter, the bee's

In this phase, students must match the images that will be projected and the names of the corresponding insects. The educator will provide teaching assistance if necessary. importance in pollination, or the spider's role as a predator that helps control insect populations.

This activity will not only help students associate insect names with their physical forms but also cultivate an appreciation for the diversity and ecological importance of each species. It encourages attention to detail, visual recognition skills, and a deeper connection to the fascinating world of insects.

Step 2

The educator helps children to carry out the block programming code on Scratch. During this lesson the class led by the educator will use block programming on Scratch following the steps explained in the fourth chapter of the dedicated additional pamphlet called **MAT3.** Coding literacy for the lessons.



Main partners



PORTUGAL

The Agrupamento de Escolas Miguel Torga is a school located in Bragança, Portugal, an inland city of the country. The school consists of three buildings, two for preschool and elementary school and one for secondary and high school. There are 88 teachers, 2 psychologists and also a speech therapist.



ITALY

Sapienza University of Rome, (Department of Planning, Design, Technology of Architecture). Sapienza was founded by Pope Boniface VIII in 1303. It's one of the oldest universities in the world and the second largest University in EU, with 11 faculties, 63 departments, 111.000 students and more than 4.700 professors.

🖒 All partners



ITALY The CISL Scuola (Confederazione Italiana Sindacati Lavoratori - Scuola) is the union of the staff of primary and nursery schools, secondary schools and vocational training of the CISL. It was founded in 1997 by the union of SINASCEL (National Union Elementary School) and SISM (Italian Union of Middle School).



ITALY

Pixel is an education and training institution based in Florence (Italy). Pixel was founded in 1999. Pixel's mission is to promote an innovative approach to education, training and culture, this is done mostly by trying to exploit the best potential of ICT for education and training.



ROMANIA

EuroEd Primary School includes a Kindergarten and a primary school. Both are accredited by the Romanian Ministry of Education. It promotes the EU dimension of education and it also encourages multiculturalism and multilingualism by providing education to children of different nationalities or ethnic groups.



SPAIN

Esciencia is an SME based in Zaragoza established in 2006 as a spin-off of the University of Zaragoza. Esciencia Eventos Cientí icos S.L. is dedicated to the management and organization of science dissemination projects. The company offers both consulting services and the design of educational programs.



BULGARIA

Zinev Art Technologies Ltd. is a company developing, implementing and managing European projects and providing consultations in the spheres of culture, art, Internet-based activities and education, VET, e-learning and school education development, as well as regional development.





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