STEM Lesson Plan - Habitats Biodiversity

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¹Affiliation not available

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<table>
<thead>
<tr>
<th>Name of Project:</th>
<th>iSTEAM</th>
<th>Duration:</th>
<th>Semester 1</th>
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<tbody>
<tr>
<td><strong>Subjects/Courses:</strong></td>
<td>Science, Computer Science (Technology), Math, PE, and Art</td>
<td>Grade Level:</td>
<td>Lower Elementary 1-3</td>
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<tr>
<td><strong>Key Knowledge and Understanding (standards)</strong></td>
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<tr>
<td>Subject</td>
<td>Standards</td>
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| **Science** | - K-2 ETS 1-1  
- K-2 ETS 1-2  
- K-2 ETS 1-3  
- 3-5 ETS 1-1  
- 3-5 ETS 1-2  
- 3-5 ETS 1-3 |
| **Computer Science** | (K-2) P1 Fostering an inclusive Computing Culture  
(3-5) P2 Collaborating Around Computing  
- P3 Recognizing and Defining Computational Problems |
| **Math** | - Make sense of problems and persevere in solving them.  
- Reason abstractly and quantitatively.  
- Construct viable arguments and critique the reasoning of others.  
- Model with mathematics.  
- Use appropriate tools strategically.  
- Attend to precision.  
- Look for and make use of structure.  
- Look for and express regularity in repeated reasoning. |
| **English** | G1: Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions).  
G2: Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).  
G3: Conduct short research projects that build knowledge about a topic. |
| **21st Century Skills** | - Critical thinking and problem-solving: Students will learn how to think carefully and find solutions to problems related to the SDGs.  
- Collaboration and teamwork: Students will work together in groups to research and come up with solutions, learning how to talk and share ideas with others.  
- Creativity and innovation: Students will learn to think in new and different ways and to try out new ideas to solve problems. |
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<th>Learning Outcomes/Objectives</th>
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<td>- Digital literacy: Students will use computers and other technology to help them research and find solutions, learning how to use digital tools.</td>
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<td>- Global citizenship: Students will learn about the world and the different issues that people face, and how they can help make the world a better place.</td>
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<td>- Adaptability and flexibility: Students will learn to be open to new ideas and be able to change their thinking when needed.</td>
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<td>- Cultural Awareness: Students will learn about different cultures, traditions, and ways of life, and understand how people can be different.</td>
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<td>- Entrepreneurial Mindset: Students will learn how to turn their ideas into action, think like a business owner and be creative in solving problems.</td>
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<td>- Students will understand the importance of the United Nations' Sustainable Development Goals (SDGs) and their role in addressing global issues.</td>
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<td>- Students will develop critical thinking and problem-solving skills by researching and developing solutions to problems related to the SDGs.</td>
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<td>- Students will learn to work effectively in teams by collaborating with their peers to research and develop solutions.</td>
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<td>- Students will be encouraged to be creative and innovative by thinking outside the box and exploring new ideas and approaches to problems.</td>
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<td>- Students will develop digital literacy skills by using technology to research and develop solutions.</td>
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<td>- Students will learn about global issues and the role that individuals and communities can play in addressing them, fostering a sense of civic responsibility.</td>
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<td>- Students will learn to be adaptable and flexible in their thinking, to think critically and creatively, and to be open to new ideas and perspectives.</td>
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<td>- Students will learn about entrepreneurship skills, innovation, and the ability to turn ideas into action.</td>
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<td>- Students will learn the engineering design process by going through the process of identifying a problem, developing ideas, creating prototypes and testing solutions, to arrive at the most effective solution.</td>
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Habitats Biodiversity

Objective: Students will be able to design a model to show solutions for habitats biodiversity.

Assessment: Students will create a model of a habitat that demonstrates the concept of biodiversity. They will explain the different features of their model and how it promotes biodiversity.

Key Points:
- Biodiversity refers to the variety of living organisms in a habitat.
- Habitats need a diverse range of plants and animals to maintain a healthy ecosystem.
- Human activities can impact biodiversity and disrupt habitats.
- Designing a model can help us understand how to create habitats that support biodiversity.
- Different elements, such as plants, water sources, and shelter, contribute to the overall biodiversity of a habitat.

Opening: To engage students, start by showing them pictures of different habitats and ask them to identify the plants and animals they see. Then, pose the question: "Why is it important to have a variety of plants and animals in a habitat?"

Introduction to New Material: Explain to students that they will be designing models of habitats that promote biodiversity. Introduce the concept of biodiversity and its importance in maintaining a healthy ecosystem. Address the common misconception that all habitats are the same and that it doesn't matter if certain species disappear.

Guided Practice: Set behavioral expectations for the work time, such as actively participating, collaborating with peers, and asking questions when needed. Provide students with examples of different habitats and discuss how each one promotes biodiversity. Scaffold questioning from easy to hard, starting with questions like "What are some plants that would be found in a forest habitat?" and progressing to "How does the diversity of plants in a habitat impact the animals that live there?" Monitor student performance by circulating the classroom, providing feedback, and addressing any misconceptions.

Independent Practice: Set behavioral expectations for the work time, such as working independently,
staying focused, and using materials responsibly. Assign students the task of creating a model of a habitat that promotes biodiversity. They should include different elements, such as plants, water sources, and shelter, and explain how each element contributes to biodiversity. This assignment will demonstrate their mastery of the objective.

**Closing:**
For the closing activity, have students share their models with the class and explain how their design promotes biodiversity. Summarize the key points discussed in the lesson and emphasize the importance of creating habitats that support a diverse range of plants and animals.

**Extension Activity:**
For students who finish early, provide them with additional materials to create a second model of a different habitat. They can compare and contrast the two models, discussing the similarities and differences in terms of promoting biodiversity.

**Homework:**
For homework, students can research a specific habitat and write a paragraph explaining how it supports biodiversity. They should include examples of plants and animals found in that habitat and describe their roles in maintaining a healthy ecosystem.

**Standards Addressed:**
1. CCSS.ELA-LITERACY.W.2.7: Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
2. CCSS.MATH.CONTENT.2.MD.D.10: Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.