WeTeach_AI

G. Leary Environmental Science Lesson Plan Series

Order of Lessons
1. Earth Under Observation: Exploring AI, Satellites, and Land Cover
2. Mapping Change: Visualizing Deforestation Patterns Over Time
3. Deforestation and Machine Learning

Instructional Considerations

Differentiation:

- For struggling learners, provide pre-sorted image sets, offer more direct guidance during mapping, or pair them with advanced students.
- For the image classification activity, consider having fewer classes or providing more pre-selected images for Teachable Machine.
- Encourage advanced learners to research additional deforestation case studies, explore more complex GIS tools (like Google Earth Engine if time allows), or delve deeper into the ethical implications of AI in environmental monitoring. They could also try to find their own images for Teachable Machine.

Technology Access and Support:

- Ensure reliable internet access and sufficient computers for the Deforestation and Machine Learning lesson.
- Be prepared for technical glitches with Teachable Machine or projector issues. Have a backup plan (e.g., pre-recorded demonstrations, printed screenshots).
- For the "Spot the Difference" activity and manual mapping, ensure the printed satellite images are high enough resolution for students to clearly see details and changes.

Time Management:

- The timings provided in the lessons are estimates. Be flexible and adjust based on student engagement and understanding. Some activities might take longer than expected, especially the hands-on mapping.
- Consider breaking down longer activities into smaller chunks if students lose focus.

Image Selection:

- For the image sorting activity, choose images that clearly represent different land covers and some obvious changes.
- For the manual mapping activity, select regions with distinct and easily identifiable deforestation patterns. Ensure the "before" and "after" images are comparable in terms of scale and lighting.
- When using Teachable Machine, use diverse but clearly distinguishable images for each land type to ensure the model has a reasonable chance of success.

Facilitation and Questioning:

- We encourage you to act as a facilitator during the lesson, guiding discussions rather than lecturing.
- Use open-ended questions to encourage critical thinking and deeper analysis *(e.g., "What patterns do you observe?", "Why do you think this change occurred?", "What are the long-term consequences?")*.
- Connect student observations back to the key terms and overall learning objectives frequently.

Safety and Ethics (AI):

- Discuss the importance of responsible data collection and avoiding bias when training AI models. While Teachable Machine is simple, it's a good opportunity to introduce the concept of "garbage in, garbage out."
- Emphasize that AI is a tool, and human judgment and ethical considerations are still paramount in environmental decision-making.

Assessment:

- Continuously observe student participation, collaboration, and the quality of their work (sorting, maps, model testing).
- Use the discussions as informal assessment opportunities to gauge understanding.
- Consider collecting the hand-drawn maps from the second lesson as a tangible artifact of their learning.

Real-World Connections:

- Throughout the lesson, emphasize the real-world relevance of remote sensing and AI in addressing global environmental challenges.
- Share current events or news articles related to deforestation and conservation efforts.
- Adjust the lesson to move away from the idea of deforestation to a topic that more fits a concern for your community (e.g. water resources, urbanization).