

5E Lesson Plan: Human Impact on Tucson's Environment

Grade Level: 6th Grade

Subject: Science

Duration: 5 days

Objective:

- Students will analyze data to determine how Tucson's population has changed since 1910.
- Students will evaluate textual evidence to describe the chain of reasoning that includes ideas such as the impact of human population growth on natural resources and possible mitigation strategies.

Standards:

- 6.L2U3.14: Develop and use models to demonstrate how living systems operate and interact.
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Engage

Day 1: Introduction to Tucson's Population Growth

1. **Essential Question:**
 - What impact do we have on our environment in Tucson, Arizona?
2. **Activity:**
 - Begin with a discussion on the essential question.
 - Show a historical timeline of Tucson's population growth using visuals from the PDF.
 - Discuss the significant milestones in Tucson's population history.
3. **Prompt:**
 - How many people do you think live in Tucson today?
 - How has the population changed over the past century?

Materials:

- Historical timeline from the PDF
 - Whiteboard and markers
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Explore

Day 2: Analyzing the Impact of Population Growth

1. **Activity:**
 - Provide students with graphs and data on Tucson's trash from the PDF.
 - Ask students to observe and record at least three things they notice and three things they wonder about the graphs.
2. **Discussion:**
 - What do the graphs tell us about Tucson's trash?
 - What might be the consequences of such growth on natural resources?
3. **Prompt:**
 - Write in your notebook what you notice or wonder about the provided graphs.

Materials:

- Graphs and data from the PDF
 - Student notebooks
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Explain

Day 3: Understanding Human Impact on the Environment

1. **Activity:**
 - Watch the video “The impact of the population boom in Tucson” and “How much trash do you think you produce in one day?”
 - Discuss the environmental impacts of population growth, focusing on trash production and resource consumption.
2. **Prompt:**
 - How does an increase in population lead to greater consumption of natural resources?
 - How does the scarcity of natural resources limit human activity?
3. **Task:**
 - Write down as many things that impact Tucson when the population increases.
 - Estimate your own daily trash production and discuss how it compares to the average.

Materials:

- Videos from the PDF
 - Student notebooks
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Elaborate

Day 4: Mitigation Strategies

1. **Activity:**
 - Explore Tucson's initiatives to manage its environmental impact by watching the videos about Tucson's wastewater plants and reclaimed water efforts.
2. **Discussion:**
 - What strategies are being implemented in Tucson to address the effects of population growth on natural resource consumption?
 - How do these strategies help mitigate the impact on the environment?
3. **Project:**
 - In groups, students will design a conservation plan that includes strategies to reduce the negative impacts of population growth and promote sustainability.

Materials:

- Videos from the PDF
 - Student notebooks
 - Chart paper and markers
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Evaluate

Day 5: Presentations and Reflections

1. **Activity:**
 - Students present their conservation plans to the class.
 - Each group will explain their strategies and how they address the challenges discussed throughout the week.
2. **Reflection:**
 - What changes can you imagine doing that will impact the Santa Cruz River and other local environments?
 - How can individuals contribute to mitigating human impact on the environment?
3. **Assessment:**
 - Use a rubric to evaluate the group presentations based on clarity, creativity, feasibility of strategies, and understanding of the concepts discussed.

Materials:

- Student presentations
 - Rubric for assessment
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Assessment Rubric

Criteria	Excellent (4)	Good (3)	Fair (2)	Needs Improvement (1)
Content	In-depth analysis; covers all aspects of the problem and solutions	Covers most aspects with some analysis	Basic coverage with minimal analysis	Incomplete or inaccurate content
Creativity	Innovative and unique strategies	Some original ideas presented	Few original ideas	Lacks originality
Feasibility	Strategies are realistic and well thought out	Most strategies are practical	Some strategies are impractical	Strategies are unrealistic
Presentation	Clear, engaging, and well-organized	Clear and organized	Understandable but lacks organization	Unclear and disorganized
Understanding	Demonstrates deep understanding of concepts	Shows good understanding	Shows basic understanding	Lacks understanding