

Geography Lesson Plan: Challenge Earth - Interactive Simulation

Lesson Objective:

1. Develop an understanding of the United Nations Sustainable Development Goals (SDGs), specifically focusing on **Sustainable Cities and Communities** (SDG 11).
2. Encourage critical thinking and decision-making by having students design their own sustainable city through a simulation.
3. Involve the students directly in a city's sustainability and economic growth in order to help them understand the challenges of balancing sustainability and city costs.
4. Reflect on the implications of urban planning decisions, such as public transport, housing, green spaces, waste management, and energy production.

Target Audience:

High school students (ages 13-17).

Overview:

The simulation can be integrated at both the beginning and end of the theoretical teaching phase. Initially, it serves as an engaging introduction to key concepts around sustainability and urban development.

At the end of the course, the simulation becomes a tool for evaluating students' learning progress and observing how their choices have evolved. This approach allows teachers to gauge how well students have internalized the ideas and how their city-building decisions reflect their newfound understanding of sustainable practices, from a political, geological, and ecological perspective.

Beyond reflecting on their simulated city-building experience, students will be encouraged to think about their real-world communities. They will explore what actions they can take, as citizens, to contribute to sustainability and positive urban change in their everyday lives.

Class Duration and Structure:

A 1-hour class can be divided into three main sections:

1. **Instructions and Introduction** (15 minutes):
Teachers will explain the simulation mechanics, outline the key concepts of sustainability, and clarify how different metrics—such as public transport, housing, and green spaces—affect the overall well-being and development of a city.
2. **Simulation** (20 minutes):
Students will engage with the simulation, making decisions and managing their virtual cities while balancing economic growth and sustainability.
3. **Final Reflection** (25 minutes):
In the final segment, students will reflect on their choices, the outcomes of their cities, and the sustainability implications. They will discuss how these lessons can be applied to their own lives and communities, fostering personal and civic responsibility.

Materials Required:

- **Introductory video:** Explaining the core concepts of sustainable cities, current urban challenges (e.g., pollution, housing shortages, traffic), and sustainable solutions (e.g., green spaces, public transport, renewable energy).
- **Computer/tablet per student:** To run the simulation individually.
- **Teacher's simulation guide:** Detailed instructions.
- **Whiteboard:** For facilitating discussions and reflection.

Class Development:

1. Instructions and Introduction (15 minutes)

Activity 1: Watch the Introductory Video (4 minutes)

Objective: Introduce students to the concept of sustainable cities and communities in a visual, engaging manner.

Instructions:

- Play the video explaining SDG 11, urban issues, and motivation for sustainable solutions in the simulation.
- After the video, ask key questions:
 - What challenges do modern cities face?
 - What does it mean for a city to be "sustainable"?

2. Simulation: Design Your City (20 minutes)

Activity 2: Simulation Explanation (5 minutes)

Objective: Ensure students understand how to use the simulation and what to expect.

Instructions:

- Explain the basic rules of the simulation.
- Highlight that each student will design their own city, making decisions about transport, housing, energy, etc., while balancing sustainability and economic growth.
- Emphasize the **balance** required between these elements, and how decisions may impact city outcomes (e.g., focusing on transport could reduce green spaces).

Activity 3: Individual Simulation (15 minutes)

Objective: Allow students to make informed decisions and experience real-time consequences of their urban planning choices.

Instructions:

- Each student will work individually on their device, creating their city and receiving feedback based on their decisions regarding public transport, housing, green spaces, waste management, and energy production.
- Teachers should move around the room to provide support and answer questions. Encourage students to experiment and think critically about trade-offs between sustainability and economic growth.
- Remind students that their city's success depends on finding a **balance** between these elements.

3. Final Reflection (25 minutes)

Activity 4: Group Reflection (25 minutes)

Objective: Encourage critical thinking and group discussion around the impact of the students' decisions.

Instructions:

- Lead an open discussion using the following reflective questions:
 1. What decisions did you make to make your city more sustainable?
 2. What challenges did you face in balancing sustainability and growth?
 3. What did you learn about the impact of your decisions?
 4. What surprised you the most during the simulation?
 5. What would you do differently if you could redesign your city?
 6. How do you see these issues reflected in the city where you live?
 7. What actions can you take now to make a difference in your city?
- Encourage students to share their responses and insights, focusing on real-world connections between the simulation and actual urban challenges.