



PROJECT 1 : Designing a City of the Future

Lesson 3

Create Efficient, Healthy, Resilient Cities

Learning Objectives:

1. Understand that the future is increasingly urban
2. Identify the issues and challenges of urban growth
3. Describe the characteristics of efficient, healthy and resilient cities



- The future is increasingly urban. Cities will absorb almost all of the world's projected population growth in the next three decades. By 2050 cities will be home to over 2 billion more people than today. How will environmental engineers, city planners and others create cities that are efficient, healthy and resilient? What issues will they face with these larger, more populated cities? In the *Environmental Engineering for the 21st Century* study, Grand Challenge 4 explores ways to "Create Efficient, Healthy, Resilient Cities".



1

Start the class by displaying the following statement:

By 2050 cities will be home to over 2 billion more people than today.

Ask students to reflect:

Why do people want to live in cities?

What do cities offer that rural communities lack?

What are some of the problems found in cities?

Why are cities prone to those issues?

Have them create a list of benefits and problems found in cities. They will refer to this list in part 3 of this lesson.





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2

Then share the following statement:

Although cities occupy only 3% of Earth’s ice-free landmass, they produce 50% of waste and 60 to 80% of global gas emissions and are responsible for 60 to 80% of energy use and 75% of all natural resource use.



In a class discussion have students relate this statistics to their own experience. Have students explore ways their communities are inefficient in terms of use of energy and resources and how they create waste and produce global gas emissions.

3

How can we create efficient, healthy and resilient cities?

Have students work together in a Think-Pair-Share to list characteristics of an efficient city, a healthy city and a resilient city.

What types of resources should cities support in order to promote a high quality of life for all their residents? Students should refer to the benefits/problems list they created in step 1 of this lesson, during this reflection.



Ask students to share back to the class and make a class list of these characteristics of efficient, healthy and resilient cities.



Introduce the ‘Design a City Project’

Working in teams, students will design a city that incorporates the characteristics of an efficient, healthy and resilient city. Utilize the Design a City Project document included on the website to introduce the project and get student teams started.